LAND DEVELOPMENT PLAN: FUQUAY-VARINA

LAND DEVELOPMENT PLAN

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PART I

LAND DEVELOPMENT PLAN

The preparation of this report, was financially aided through a Federal grant from the Urban Renewal Administration of the Housing and Home Finance Agency, under the Urban Planning Assistance Program authorized by Section 701 of the Housing Act of 1954, as amended.

PART I

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PREFACE

INTRODUCTION

In June of 1963, the Town of Fuquay-Varina contracted with the Division of Community Planning for technical assistance in preparing and implementing a planning program dedicated to the improvement of the community. The program was partially financed through an urban planning assistance grant from the Housing and Home Finance Agency of the U.S. Government under the provisions of Section 701 of the Housing Act of 1954, as amended.

The work which the Fuquay-Varina Zoning and Planning Board and the Division of Community Planning will have completed during the contract are as follows:

* Base Mapping
* Land Use Survey and Analysis
* Population and Economy Study
  Land Use Plan
  Zoning Ordinance
  Subdivision Regulations

* Completed Projects

Throughout the contract period of two years the town is being afforded the services of a professional planner who is available for assistance at planning board meetings, town commission meetings, and public hearings.

SCOPE

This publication contains information which the Fuquay-Varina Zoning and Planning Board will find necessary for the formulation of the community plans of the future. The sections contained herein discuss existing land use, housing, water and sewer systems, soils, and climate. In addition, a synopsis on town history and growth and accessibility are presented in the report. The population and economy studies

which also are important in formulating the plans are presented in another Planning Board publication dated June 1964.

PURPOSE

Towns consist of many elements: physical, social, cultural, financial, governmental, etc. They are the centers of numerous activities which represent investments of millions of dollars in land, buildings, streets, railroads, and utilities. In addition, towns are the focal points of education, religion, and recreation; police and fire protection and water and sewer facilities are typical services offered. In sum, towns are extremely complicated mechanisms which need planning and guidance in order to operate at peak performance. A sense of direction is needed for the successful future of every town. To achieve this sense of direction, comprehensive planning is necessary. To provide the background of vitally important information which sound planning demands is the purpose of this study.

THE FUQUAY-VARINA PLANNING AREA

Urban development often extends beyond community corporate limits. The planning program for Fuquay-Varina takes this fact into consideration. In addition to studying the area within the town limits, the land up to one mile beyond will be included in the planning studies; this area is termed the "fringe area." The land within the community boundary plus the land in the fringe area form the Fuquay-Varina Planning Area. Within the town limits there are 1,963 acres; in the fringe area there are 6,753. The boundaries of the planning area encompass nearly fourteen square miles.

HISTORY & GEOGRAPHY

HISTORY AND GEOGRAPHY*

Located in the southern section of Wake County, Fuquay-Varina is just fifteen miles from the State Capital--Raleigh. Fuquay-Varina was once known as the "Dark Corner of Wake County," but today it is known as a fast-growing community in contention for second rank in population in the county. Fuquay-Varina has a very colorful past and an apparently bright future.

As the name implies, Fuquay-Varina stemmed from two different settlements. One was Sippihaw, later named Fuquay-Springs, and the other was Varina.

Sippihaw was settled in the 1850's and became famous for a spring whose healing powers were reputed to be phenomenal. The name of the settlement was changed to Fuquay-Springs in 1902 for the Fuquay family which located in the area. Fuquay-Springs became so famous that people travelled from all over eastern United States to partake of the flowing panacea of the spring. Each year on Easter Monday and on the Fourth of July the town was crowded with people seeking the restorative powers of the spring. On these days parades and other festivities were held.

Varina was settled in the 1890's. The little community is said to be named after Virginia (Varina) Ballentine the wife of the settlement's first postmaster. Varina also was the name of the wife of Jefferson Davis - president of the Confederacy. In any event, this was the fanciful name given to the community.

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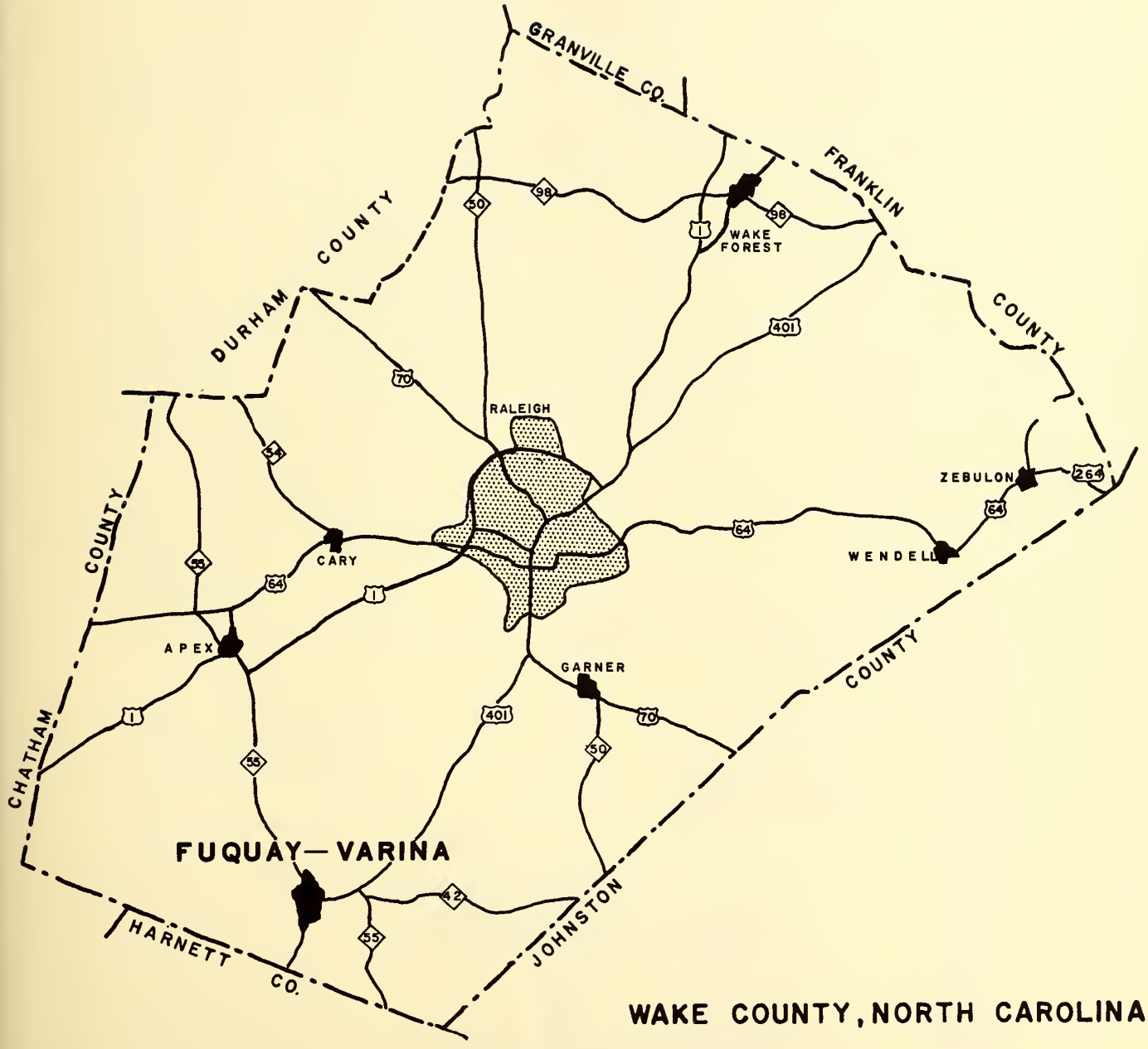
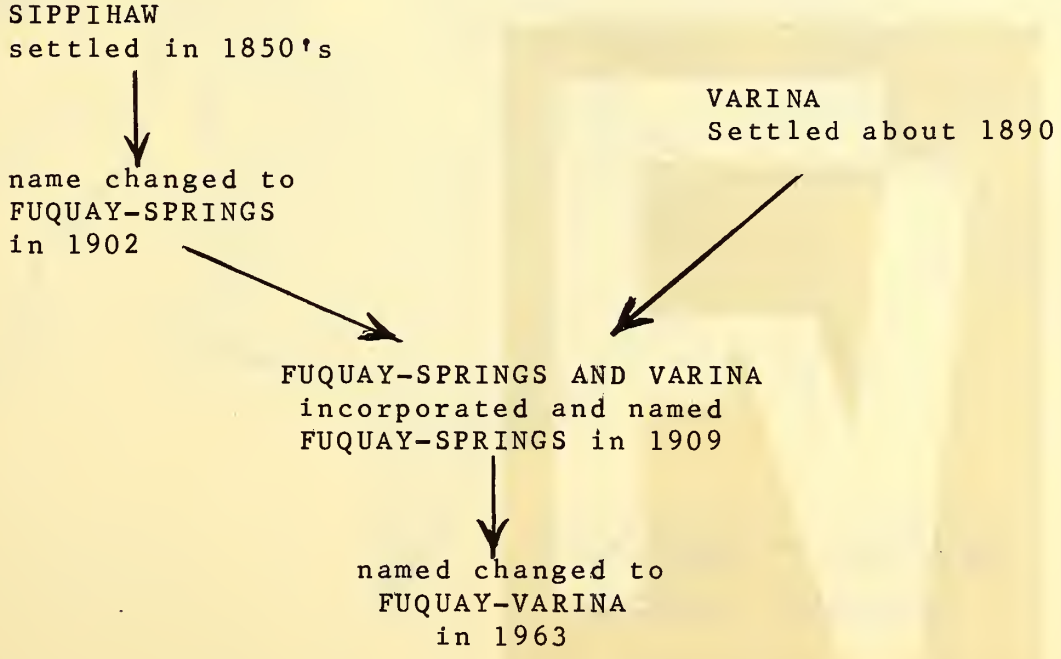
* Taken from various articles of the Raleigh News and Observer dating back to August 1931 and the April 27, 1962 issue of The State magazine, Volume 19, p. 3 ff.



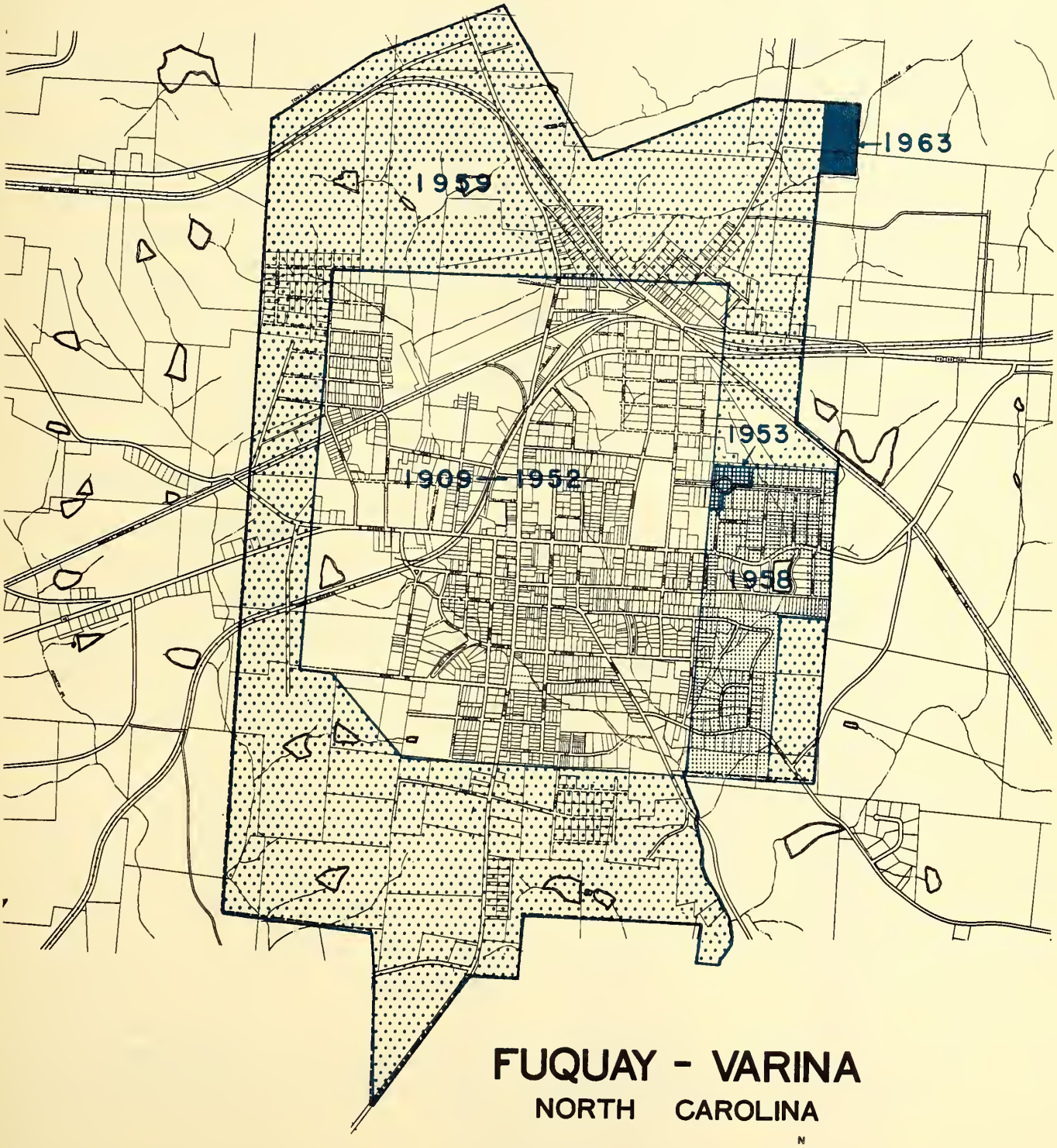
WAKE COUNTY, NORTH CAROLINA

In 1909 Varina and Fuquay-Springs were incorporated as the Town of Fuquay-Springs. This incorporation, however, has not destroyed the identity of Varina. Varina is still identifiable on maps and, as one travels through the northern section of town, by its business district and the surrounding housing. It is known and referred to by residents of the area by this very name. What remains as a major barrier tending to keep the two business districts of Fuquay-Varina separated is the complex of railroad rights-of-way between them. Hence, both areas can still be identified as separate units. However, in spite of this barrier they are being welded together by commercial development which is slowly but deliberately expanding along Main Street and by residential development which is creeping to the north along Woodrow and Ennis Streets. In June of 1963, the name of the Fuquay-Varina was adopted by the town.

The following diagram briefly describes the sequence of name changes and incorporation.



SUCCESSIVE CORPORATE LIMITS



FUQUAY - VARINA

NORTH CAROLINA

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Over the years there has been rivalry between the two settlements. However, this conflict has been dissipating slowly over the years. The incorporation of the two in 1909 and the recent name change to Fuquay-Varina in 1963 are good indications of the unity and maturity of the community today.

Since its first census in 1910, records show that the town has had a steady growth. The percent of growth has never been below +37.4 since incorporation; between 1950 and 1960 it was +70.1 with a gain of 1,397 inhabitants. It is pointed out, however, that an annexation was partially responsible for this healthy advance in the number of residents in this decade. The 1960 Census listed the town as having 3,389 citizens. Projections for Fuquay-Varina indicate that the town will double its population by 1980 if past trends continue.

ACCESSIBILITY*

Fuquay-Varina is located on U.S. 401, N.C. 55, and N.C. 42 in the south of Wake County. U.S. 401 extends from the northern to southern borders of North Carolina through the major cities of Raleigh and Fayetteville. Presently, this highway passes directly through the Central Business District of Fuquay. However, a bypass study is now being made of this route.

N.C. 55, which extends from Durham to Oriental on Pamlico Sound, enters the town from the north and passes through the business district of Varina. From the business section the route follows U.S. 401 to two miles beyond the eastern limit of the town. At this point N.C. 55 heads in a southernly direction to Angier in Harnett County.

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*Average daily traffic figures for the community's major thoroughfares are given in the Land Use Survey and Analysis.

N.C. 42 enters the town in the west on West Academy Street. In the Central Business District the route bears to the north on Main Street. It leaves the community in the east on U.S. 401, and it leaves 401 at the same location as N.C. 55. However, at this location it veers off in an easterly direction toward Willow Springs. Major cities on this route are Sanford and Wilson.

Fuquay-Varina is served by two railroads. Both have station facilities in the Varina section of town. The Norfolk-Southern Railroad operates six trains through the community daily. These run from Raleigh to Fayetteville and return, from Raleigh to Gulf and return, and from Raleigh to Charlotte and Charlotte to Raleigh each day.

The Durham and Southern Railroad serves Fuquay-Varina with two trains per day. A train runs from Durham to Dunn and returns each day. Both railroads operate extra trains on demand. During tobacco season it is sometimes necessary to add extra trains to the schedule.

The Raleigh-Durham Airport is just twenty miles to the north of Fuquay-Varina. Here flying connections can be made to all parts of the world with frequent nonstop service to major eastern U.S. cities.

LAND USE

Of the various steps in the planning process, the inventory of land use is one of the most important. This step involves the survey of use of all buildings and parcels of land in the planning area. The Fuquay-Varina inventory was accomplished by the means of a "windshield survey" in the residential and outlying areas and a "door-to-door survey" in the more congested areas, such as downtown. Information recorded included use of all structures and land and the tabulation of condition of all residential structures. The latter information is treated in the section of this report dedicated to housing.

This chapter represents the most up-to-date gathering of facts on land use in Fuquay-Varina. The information contained herein is of much importance for the development of the land use and sketch thoroughfare plans. In addition,the study can be of value to the town government and private firms in the location and relocation of operations. The town can use the information in the fields of zoning, subdivision regulations, corporate limits expansion, land acquisition for street rights-of-way, procurement of easements, and water and sewer extensions. Moreover, leaders of churches and schools may find useful information in this analysis.

The existing land use in Fuquay-Varina, for the purpose of this analysis, has been categorized into six generalized groupings, namely: residential, commerical, industrial, social and cultural, streets and railroads, and vacant. A listing of the typical uses in each of the general categories is given in the following:

RESIDENTIAL

Dwellings - single-family, multi-family, tourist homes, house trailers.

COMMERCIAL

Retail Trade - clothing stores, gift shops, jewelry stores, appliance stores, auto sales, hardware stores, fertilizer sales, service stations, grocery stores, drug stores, furniture stores, etc.

Wholesale Trade - fertilizer sales, bulk petroleum sales and storage, fruit and vegetable sales, livestock markets, etc.

Consumer Services - restaurants, barber shops, beauty shops, laundromats, theatres, pool halls, post offices, etc.

Professional Services - municipal offices, fire stations, banks, law offices, doctors, dentists, etc.

Business Services - repair shops.

INDUSTRIAL

Manufacturing - lumber mills,garment manufacturing, textile mills, tobacco processing, etc.

Utilities - water supply facilities, sewage disposal plants, electric substations.

SOCIAL AND CULTURAL

Public and Semi-public - schools, kindergartens, churches, playgrounds, parks, ball diamonds, cemeteries, jails, etc.

STREETS AND RAILROADS

Rights-of-way - roads, streets, railroads.

VACANT

Vacant Land and Buildings - Structures and land which were considered to be in agricultural, pastoral, woodland, and water body use at the time of the survey are considered to be vacant.

LAND USE ANALYSIS

The general land use categories listed above are each treated and analyzed separately. Within each of the six following sections dedicated to the land use groupings, a commentary is made on distribution, amounts in acreage and percentage, and rank relative to other categories.

RESIDENTIAL

	Within Town Limits	In Fringe Area	In Planning Area
One-family	266 acres	142 acres	408 acres
Two-family	7	--	7
Multi-family	2	--	2
Trailer Homes	3	1	4
TOTALS	278 acres	143 acres	421 acres

Fuquay-Varina has one large concentration of residential uses; it is located to the east and south of the Norfolk-Southern Railroad within the town limits. This area can be considered the residential "heart" of the community. Its concentration envelopes the central business district and the public school complex at East Academy and South Ennis Streets. It is almost exclusively single-family residential; there are ten known duplexes, one three-family structure, and two four-family dwellings. These two and multi-family accommodations are located generally on the fringe and to the south of the Central Business District (CBD) and to the north of the school complex. Much of the land in the area is solidly developed. However, there are sections in which there are numerous vacant lots. Some are undeveloped because of their marginal character for use. Marginal land in Fuquay-Varina is generally low lying and wet or too steep for conventional construction, but most vacant lots have merely been skipped in the sprawl of growth leading out from the CBD. Little encroachment upon

this residential area by commercial and industrial establishments has been found. The only major instance of encroachment is a feed mill at Aiken and Vance Streets.

The second largest concentration of residential uses is located to the west of the Fayetteville branch of the Norfolk-Southern Railroad. This area is predominantly Negro; it is separated from the CBD by the railroad. Much of the area is subjected to a mixture of uses not conducive to the maintenance of pleasant residential neighborhoods. For instance, there are four commercial establishments mixed with dwellings on N. West Street. Three other commercial uses are found in the area which extends beyond the Charlotte branch of the Norfolk-Southern to Longfellow Street. Development in the area is disorderly in appearance. There is a large amount of vacant land that is unkempt. Probably because of the high incidence of tenant occupancy in this neighborhood, this section of the community presents a shabby appearance and an air of depression. It is not primarily the undesirable mixture of uses but the condition of buildings and uses which deprives this area of the amenities enjoyed in other sections of town. The housing study which follows reveals that there is a large number of deteriorating and dilapidated homes in the area.

Other residential use concentrations can be found in the vicinity of the Varina business district. To the north east of the business section is a cluster of homes along Stewart, North, and Eakes Streets. This grouping of dwellings encircles a large tobacco warehouse and backs on the Varina business section. About half of the homes in the area are in the state of deterioration. To the west of the Varina business section and the Durham and Southern Railroad is a residential section which also contains many deteriorating and dilapidated homes. This area is bounded by Wake Chapel Road and two railroad rights-of-way. There are several warehouses on the fringe of this residential complex.

One other section in which residences are clustered is along N.C. 42 to the west of the town within the fringe area. Here, homes are located in a strip no more than a lot deep near the Piney Grove-Wilbon Road. At the intersection is a combination gas station-grocery store. All except four homes are above average in appearance.

There are few residential lots of less than 5,000 square feet in Fuquay-Varina. Generally, lots in the older sections of the community are smaller than those in the new parts. In the newer subdivisions of the planning area, lot sizes may average from 15,000 to 20,000 square feet. In the partially developed neighborhood to the northwest is such a subdivision with large lots and in the southeast section is another. It appears that the newer the development the larger the lot size.

Residential development in the past has generally been orderly and compact. It has remained close in to both the CBD and the Varina business section. However, recent development has tended to spread out more, skipping over useable parcels appearing to be perfectly desirable for residential development. This sprawl can be seen on the land use map; new development is not expanding in increments beyond present development, but it has been jutting out in prongs and evolving in insular forms. "Jutting out" can be seen in the south and north portions of the largest residential concentration. Islands of development can be observed in close to the east, south, and southwest sections within the town limits. Both "insular" and "prong" development allow for pockets of vacant land. These voids are expensive to the town in the maintaining of efficient and financially sound water and sewer service and fire and police protection.

Residential development in the community has generally taken place on gently rolling to almost hilly land. This type of topography is conducive to lovely residential neighborhoods. At the same time it consumes land which is unsuitable for many industrial and commercial uses.

Of the 1,963 acres within the town limits, 278 or approximately 14 percent are used residentially. This represents 43 percent of the developed land within the corporate boundaries. In the total planning area, land utilized by residential uses amounts to 421 acres representing 5 percent of the total land and 35 percent of the developed land. Residential uses ranked second in the town and planning area but third in the fringe area.

COMMERCIAL	Within Town Limits	In Fringe Area	In Planning Area
Retail Trade	22 acres	3 acres	25 acres
Wholesale Trade			
Tobacco Sales	15	2	17
Tobacco Warehousing	12	5	17
Other	7	-	7
Commercial Services	13	5	18
TOTALS	69 acres	15 acres	84 acres

Retail Trade and Commercial Services

Fuquay-Varina has several areas devoted to commercial use. However, the Central Business District (CBD) is the most dominating; this area is the focal point of commercial, financial, and civil activity in the town. Here can be found all types of convenience and necessity goods and personal service facilities. This district is the comparison shopping center of the community.

The CBD can be delineated generally by Vance Street on the south, Academy Street on the north, Fuquay Avenue on the east, and Spring Avenue on the west. This boundary is overlapped by commercial uses on all sides except the west. Nevertheless, the uses of the CBD are well-contained and concentrated so that shopping can be done very conveniently on foot.

Traffic movement is not too difficult on Main Street, but some rather complicated maneuvers are necessary to gain access

to Depot and Raleigh Streets from Main Street which is the only major street that passes through the CBD. Depot Street must be approached from the center of the CBD because it is "one-way" leading from Main Street and the latter has directives that discourage turning movements into it.

Parking facilities are adequate in the district. On-street parking accounts for most of the facilities available; off-street areas are needed for peak shopping periods. One of the main attractions of a true shopping center is plenty of free and convenient parking facilities. It is apparent that this is realized by downtown leaders because through co-operative efforts of these citizens over 80 off-street parking spaces have been created just recently.

The street pattern of the CBD is poor but can be made more functional through sound thoroughfare planning. Presently, there is a partial loop surrounding the business district which contains streets of adequate size and construction which can serve as an access belt. The only missing link in the loop is from Aiken to Academy Streets on the west side of the CBD. All intersecting streets on Main Street south of Academy Street, are off set; one is out of alignment nearly fifty feet. These all tend to make traffic movement difficult and hazardous.

Nearly all the land in the CBD is being used for commercial type operations. On the fringe to the west are a few dwellings. Vacant land is at a minimum. Normally, the highest land values in a community are found in the CBD; consequently, space is at a premium. In Fuquay-Varina, there are several establishments in the downtown area that are large land consumers which one would not expect to encounter in a shopping center, namely: five service stations at the four main intersections of the CBD and two automobile dealers with garage facilities. These uses are not in accord with what normally can be expected in a shopping district. These are the types of uses dedicated to serving the automotive public

and should be found in areas where traffic access is easy and where land is not so much in demand. In addition, a large variety store warehouse is located on the eastern edge of the CBD backing on the commercial uses of Main Street and across the street from residences. Uses such as these could well be located in outlying areas because they do not directly serve the shopper. Many of the uses described as large consumers of area would more than likely benefit by moving to outlying districts dedicated to their type of operation; i.e., it is usually more convenient to purchase gasoline on a major arterial on the fringe of a residential district than to negotiate the traffic of the CBD; it is generally more convenient to operate an automobile agency where congestion is at a minimum on a major street away from the CBD; and it is often more convenient for large trucks to load and unload their goods at warehouses in a less densely compacted section.

Just to the north of the CBD and surrounded on three sides by residential areas is a complex of mixed uses consisting of a tobacco redrying plant, a tobacco warehouse, a large manufacturing concern, several dwellings, and two banks. As one travels south on Main Street, in this area on one side of the street he will encounter a bank, a manufacturing firm, a two-family dwelling, an auto parts store, a tire recapping firm, two vacant lots, an auto sales company, an insurance agency, and a used car lot. On the other side he will see a bank, a tobacco warehouse, a three-family dwelling, three vacant lots, a bulk oil sales office, a shoe repair shop, a furniture store, a bus station and taxi stand, and a service station. This mixture of uses takes place within the space of one block between Jones and Academy Streets. It would tend to make this area a second best location for nearly any use.

Further to the north on Main Street there is a minor lapse in commercial development; for about two blocks there is a sprinkling of residences and a church. However, starting at King Street a strip of commercial uses is developing.

Presently the strip is in the adolescent stage where vacant land and dwellings still remain between the various uses. The development is tending to remain on Main Street and not concentrating in any complex; most uses are no more than one lot deep. Land farther in from Main Street to the southeast is vacant. The strip is interrupted between Johnson and Ennis Streets by a prong of residential uses, but the strip continues again at Ennis and beyond the Durham and Southern Railroad tracks.

On Wake Chapel Road just off Main Street is a new shopping center. The center has a major chain supermarket, a drug store, an insurance agency, and a dry cleaners. The center is convenient in that there is plenty of parking space and it appears to be a pleasant place at which to shop. One use is incompatible for location in a shopping center in that it does not need vast amounts of parking facilities, namely: the insurance office. This office would normally be considered to be a second floor use in a shopping center. This establishment probably located in the shopping center because of the lack of new modern facilities elsewhere. Access to the shopping center is difficult, particularly when approaching it from either direction on Main Street. From one direction it is necessary to cross on-coming traffic and railroad tracks when negotiating two left-hand turns, and from the other, it is necessary to make a very sharp right turn of about 30° across railroad tracks to get to Wake Chapel Road only to face a left-hand turn to enter the shopping center.

The Varina commercial district to the north of the Durham and Southern Railroad has stores which are in direct competition with those of the central business district. These offer comparison shopping for the convenience and necessity items used daily by the citizens of the community. The Varina district was not as appealing as the CBD until recently because of the unkempt appearance and the low number of services offered. However, in the past few months steps have been taken to upgrade the appearance of the district by cleaning-up store fronts

and painting them all with compatible colors, by constructing a canopy of modern, uniform, and appealing design in the entire district, by establishing a standard rule for principal sign display, and by planting shrubbery along the railroad tracks which parallel Broad Street. What effect these changes will have on sales in the Varina district only the future will reveal. Nevertheless, shopper appeal has been increased, and the district now finds itself more in contention for the consumer's dollar.

At the time of the survey there were 35 acres in the retail trade and commercial services use categories within the town limits. This amount represents nearly 6 percent of the developed land and nearly 2 percent of the total land in the town. In the total planning area there were 43 acres devoted to this use.

Wholesale Trade

There are five tobacco sales warehouses and five tobacco storage warehouses in the planning area. All except one lie within the city limits. Four warehouses are located in areas where other uses are dominant. One is situated on Main Street across from two banks and a manufacturing concern. Another is located just south of the shopping center, and a third is located just east of the Varina business district; it is nearly surrounded by residential uses. The fourth is located on Wake Chapel Road; it is across the street from a cemetery and abuts residential property on two sides. There is a variety store warehouse in the CBD which has been discussed previously.

However, most other warehousing in the community is near the corporate limits where it consumes vast areas and is not depriving other uses of space. Activity in the areas of most of the large warehouses in the community reaches its peak during the tobacco season. Traffic congestion is at times a problem especially for warehousing establishments

which are located close in to the CBD. In the past, warehousing tended to locate near the CBD and where railroad trackage was readily accessible. However, this is no longer the case. The newer warehousing structures are locating generally on the outskirts of existing development, away from congested areas, and on or near major roads. Therefore, it can be surmised that these large users of land have two major requirements for location. These are access to a major road and plenty of flat, level land.

Wholesale operations in the community use approximately 34 acres of land, 27 of which are used by the tobacco industry. These 34 acres represent 5 percent of the developed land and 2 percent of the total land in Fuquay-Varina. The total acreage in the planning area devoted to wholesale operations amounts to 41 acres, 34 of which are used by the tobacco industry. Of the developed land in the planning area, wholesale and warehousing operations utilize 3 percent. This use category represents less than 1 percent of the total land in the planning area.

INDUSTRIAL

	Within Town Limits	In Fringe Area	In Planning Area
Manufacturing	13 acres	--	13 acres
Utilities	8	26 acres	34
TOTAL	21 acres	26 acres	47 acres

There are thirteen industrial establishments in the planning area according to the land use survey tabulations. No particular concentration of the uses listed in this category has been found. However, five concerns are located on railroad rights-of-way, and three are located on major arterials. Except for those in the fringe area, the industries have taken advantage of the available facilities offered them, namely: water and sewer facilities, fire protection, police

protection, large expanses of land, level and buildable land, access to major roads, and in some cases access to rail service. The industries beyond the town limits are not provided with the community facilities of water and sewer service and town fire and police protection.

In most cases, industry has isolated itself from other uses in the community. Nevertheless, there are a few which are located either entirely in residential neighborhoods or on the periphery of commercial or residential areas. One is located on Main Street just north of the CBD; another is located across the street from the Chamber of Commerce, beside two dwellings and a commercial establishment. Mixtures of this type generally degrade communities in appearance and value. An instance of possible degradation, for example, is the location of the feed mill on Aiken Street between Raleigh and Vance Streets. This industrial establishment is surrounded completely by residential land, and it is likely that it has a detrimental effect on the neighborhood.

The largest users of industrial land in the planning area are utilities; over 34 acres are occupied by these. The old and new town disposal plant sites are the largest consumers of land in the utilities subcategory. These are located on the southern periphery of the town on Neil Creek. At the old site is the town refuse disposal area. It is considered to be an "open dump" and offensive odors can be sensed on the leeward side of the location. Burning of garbage and refuse is the method used for the destruction of the waste, and smoke is sometimes carried by the winds toward the town and outlying residential areas. The new disposal plant could be a good neighbor to nearly any use.

The 21 acres in industrial uses within the town limits represent 3 percent of the developed land and 1 percent of the total land in the community. In the entire planning area 47 acres or 4 percent of the developed land is devoted to this use.

SOCIAL AND CULTURAL

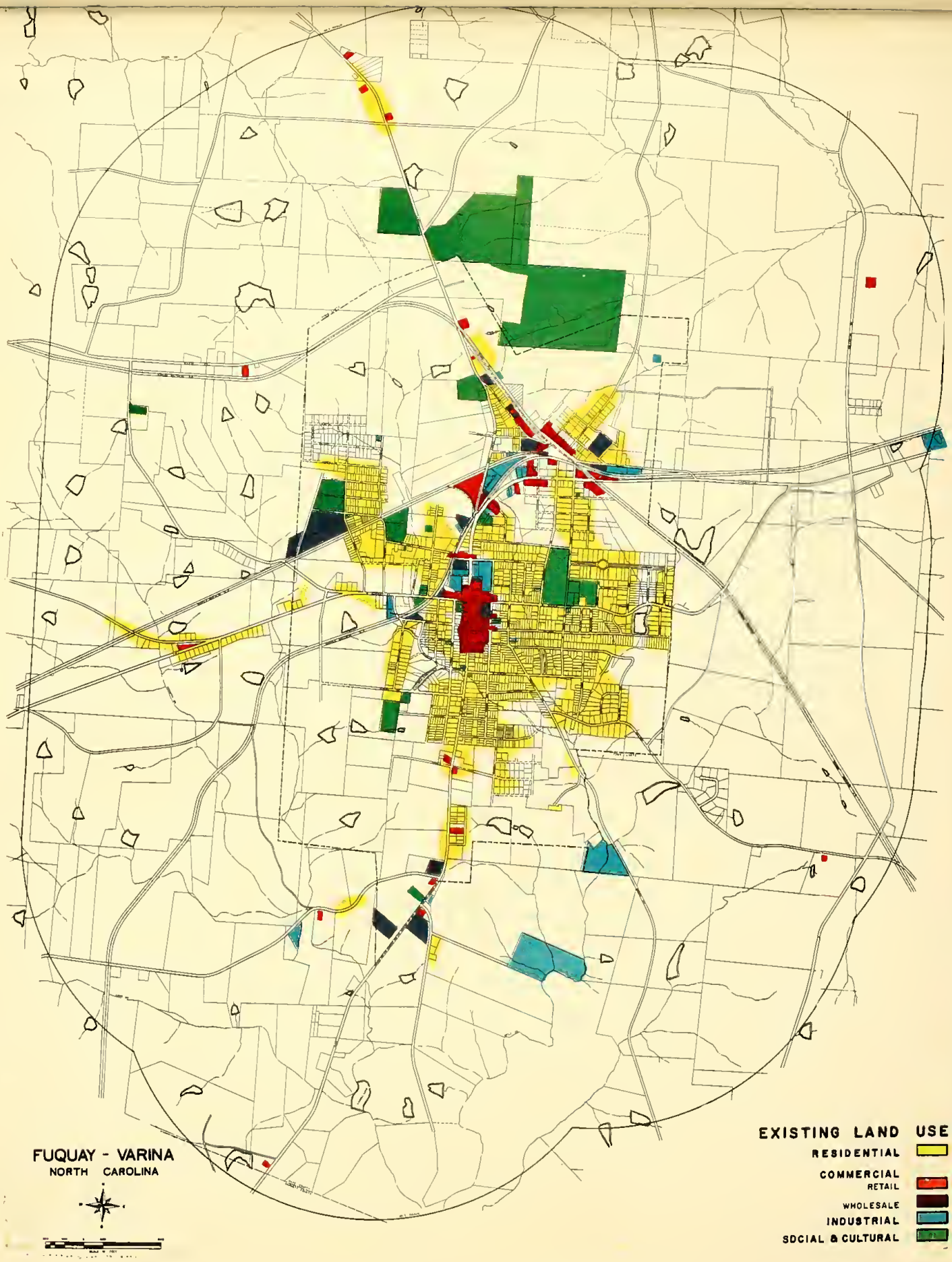
	Within Town Limits	In Fringe Area	In Planning Area
Social and Cultural	66 acres	144 acres	210 acres

Social and cultural uses include schools, churches, parks and institutional uses which provide for the physical and mental development and care or cultural enlightment of the citizenry. The majority of the uses in this category are conveniently located for serving the residents of the community.

Within the town limits are three school sites, several churches, a cemetery, and a hospital. The white school is located at the intersection of Ennis and West Academy Streets. This school includes several buildings and a stadium, and it is very conveniently located near the geographic center of all white residential districts. One feature of the site which is not desirable is that it is split by Ennis Street. To attend certain classes, children must cross the street; i.e., the gymnasium and music building are on the east side of the street while the main physical plant is on the west. Ennis Street is the only north-south through street connecting the Varina business section directly with the major residential district of the town.

The two Negro schools are very conveniently located in the northwest neighborhood. However, one is located at the intersection of the Charlotte branch of the Norfolk-Southern Railroad and Lawrence Street. Here there is always danger because the crossing is at grade with the tracks. Also, noise may figure as a nuisance.

The churches of the community are located generally in residential neighborhoods where they can serve most conveniently. However, one large church is located in the CBD far from the center of the area it serves. Two others are located in the southern section of town in areas now void of dwellings; however, these churches do have good access.


FUQUAY - VARINA
NORTH CAROLINA
EXISTING LAND USE
RESIDENTIAL
COMMERCIAL
RETAIL
WHOLESALE
INDUSTRIAL
SOCIAL & CULTURAL

The hospital is located to the southwest of the CBD in an inconspicuous location several blocks from a major arterial. The opposite of this should be the case. For emergency purposes the hospital should be located on a major road, and it should be easily accessible from all portions of the planning area. In addition, it should be one of the most well known locations in the community.

In the fringe area the only social and cultural uses found by the inventory were two cemeteries and a golf course. The largest individual consumer of land is the golf course on the periphery of the northern limits of the town.

Acreages of the social and cultural land use category ranked fourth in the town, fringe, and total planning area. In the town 66 acres are devoted to this use. This amount represents 10 percent of the developed land and 3 percent of the total land. In the entire planning area there are 210 acres dedicated to uses in this grouping representing 17 percent of the developed land and 2 percent of the total land.

STREETS AND RAILROADS

	Within Town Limits	In Fringe Area	In Planning Area
Streets	165 acres	160 acres	325 acres
Railroads	46	74	120
TOTAL	211 acres	234 acres	445 acres

Streets, roads, and railroads rights-of-way rank third in total acreages of all the land users in the community. Over 211 acres representing 33 percent of the developed land and nearly 11 percent of the total land in the community are dedicated to streets and railroad rights-of-way. Only residential and vacant land acreages out-rank the amount of area in this category.

FUQUAY-VARINA STREET MILEAGE

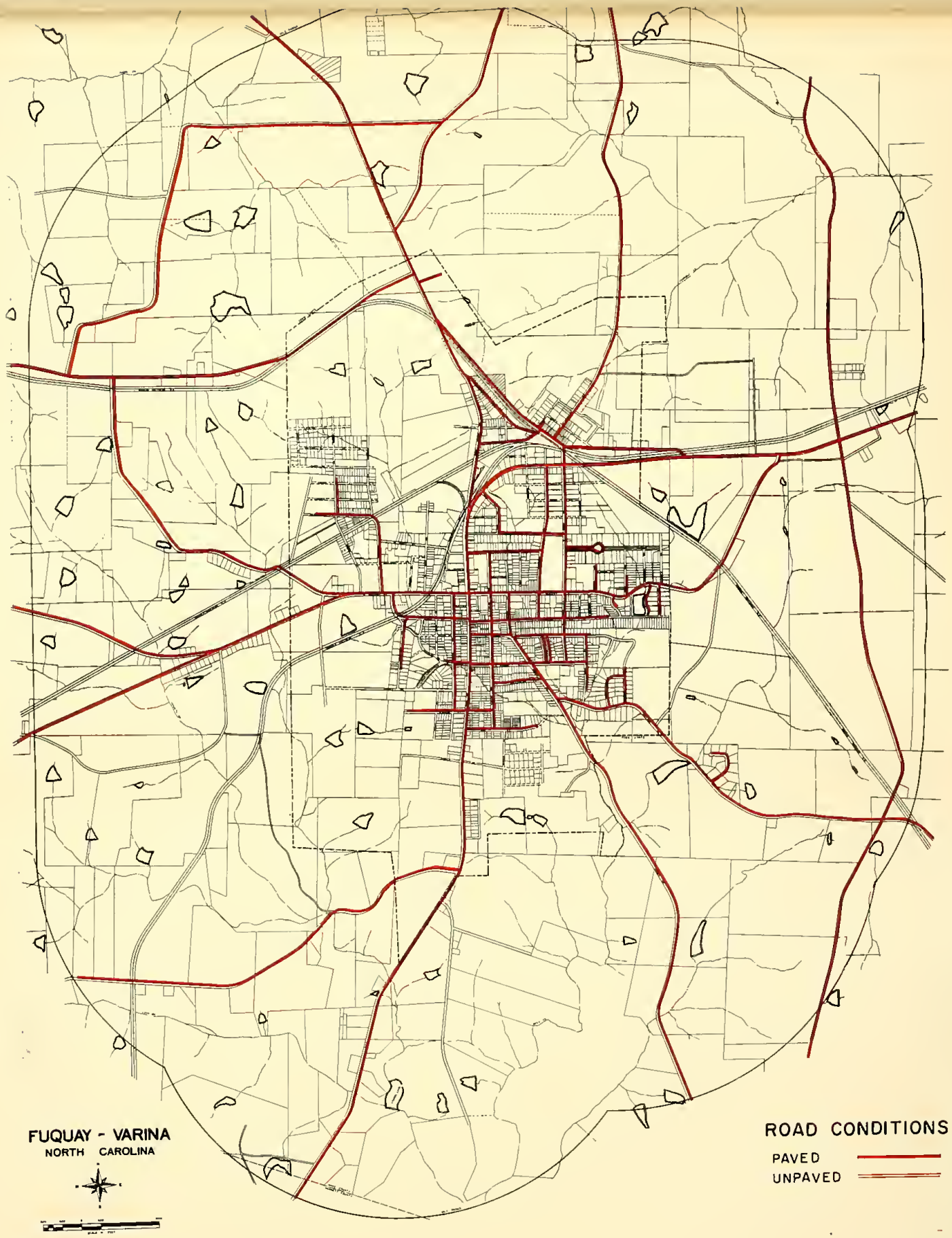
	Paved	Unpaved	Totals
State Maintained /1			
Highways	3.98 miles	0.00 miles	3.98 miles
Secondary Roads	5.30	.47	5.77
Town Maintained /2	10.02	9.56	19.58
Ave. width less than 16 feet /3		.06	.06
TOTALS	19.30	10.09	29.39

1/ As of January 1, 1964.
2/ As of July 1, 1963.
3/ Streets not eligible for "Powell Bill" funds.

Paved and unpaved streets can be seen on the Street Condition Map on page 25. Streets have been paved in nearly all sections to the east and south of U.S. 401. However, in the north and northwest sections of the community, nearly all residential streets are unpaved. A very high percentage of the 9.56 miles of unpaved streets in Fuquay-Varina are in these sections. Paving is presently being done in these portions of the community, and by the end of fall several residential streets will have been surfaced.

East-West Streets

The only street in the community which travels from the east to the west corporate limits is Academy Street. Its average 24 hour traffic volumes as of December 1963 at the town limits were recorded as approximately 700 on the east and 2,500 on the west. The reason for this difference is that N.C. 42 follows that portion west of Main Street. All other east-west streets are cut short of crossing the community completely. This situation has its advantages and disadvantages. For instance, a low number of crosstown streets tends to cut heavy traffic down in residential neighborhoods. On the other


FUQUAY - VARINA
NORTH CAROLINA
ROAD CONDITIONS
PAVED
UNPAVED

hand, if there is only one through street across the community at its center, it is difficult to cross the town in the north and south sections.

North-South Streets

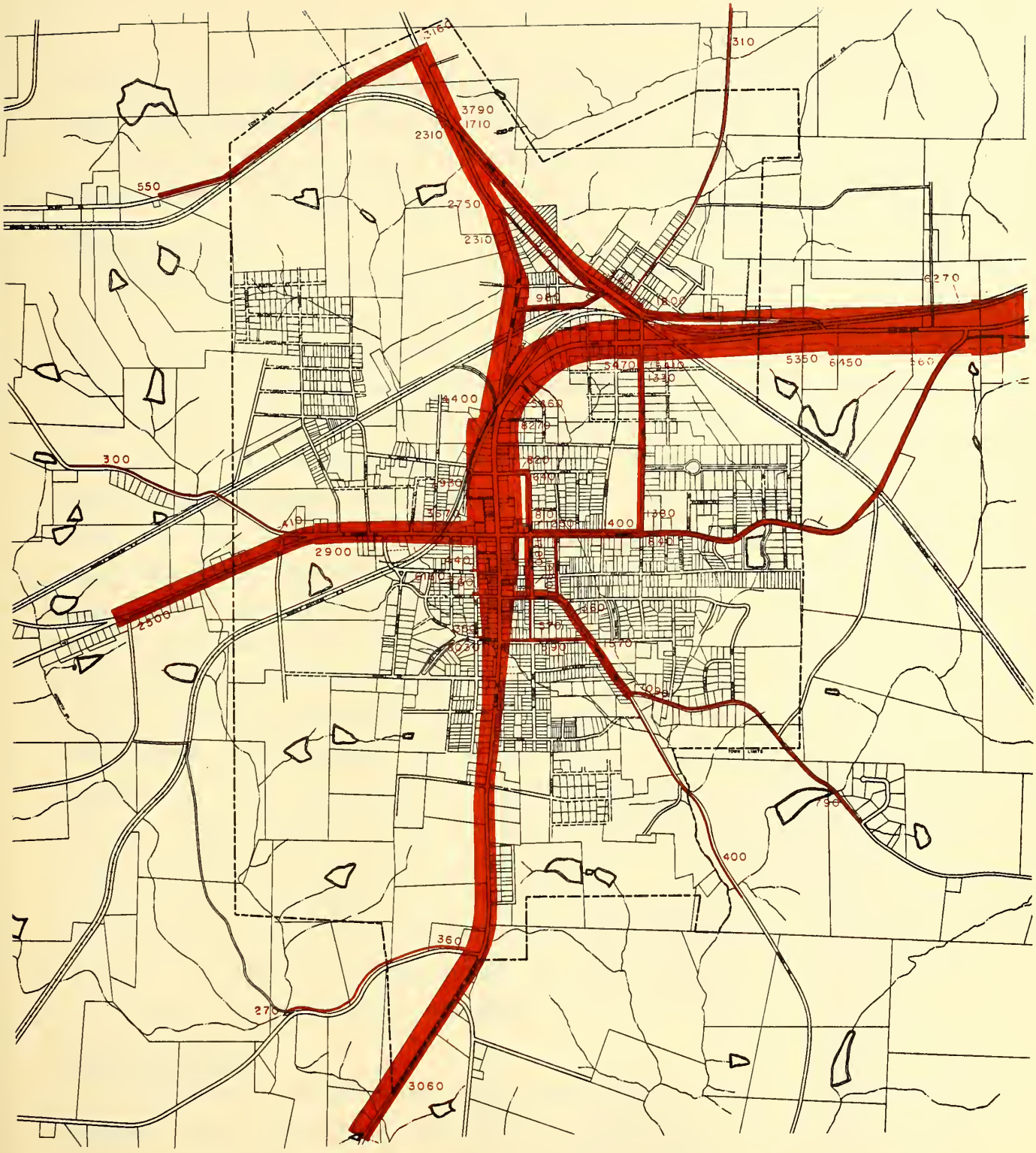
To traverse the community from the north limits to the south it is necessary to use two streets, namely: Wake Chapel Road and Main Street (U.S. 401). All other north-south streets are much less than half the length of this combined route. The only street connecting the Varina settlement with the major section of the community is Ennis Street which, as has been noted, passes through the Fuquay-Varina school complex and a neighborhood which is exclusively residential. Generally, where north-south streets are in existence is where development has taken place between Fuquay-Springs and Varina. Where through-streets do not exist is where growth has been stymied. This can be observed on the land use map along Main Street just northwest of the largest concentration of residential development.

Average Daily Traffic Counts

U.S. 401 is the most heavily travelled thoroughfare in the community; its volumes averaged as high as 8,200 vehicles per day near the center of town at the intersection of Academy and Main Streets in October 1963. At the northeastern and southern extremities of this route in the fringe area the twenty-four hour counts were 4,990 and 3,060, respectively. The major stream of traffic movement through the community is along this route.

N.C. 55 has daily counts that range from 3,790 to the north of town to 3,160 in the Varina Business Section. This route shares the same right-of-way as U.S 401 in the eastern section of the community.

N.C. 42 also uses a part of U.S. 401 right-of-way from Academy Street to Five Points east of town. At the western town limits counts are as high as 2,500; at the intersection



FUQUAY - VARINA
NORTH CAROLINA

AVERAGE 24 HOUR
TRAFFIC VOLUMES

N
W E
S

SCALE IN FEET

8000
6000
4000
2000
TRAFFIC VOLUMES

The preparation of this map was financed in part through an urban planning grant from the Housing and Home Finance Agency, under the provisions of Section 701 of the Housing Act of 1954, as amended.

THIS MAP WAS PREPARED FOR THE TOWN OF FUQUAY-VARINA IN 1963 BY THE DEPARTMENT OF CONSERVATION AND DEVELOPMENT DIVISION OF COMMUNITY PLANNING

of Main and Academy Streets the count was 3,670 on the average for 24 hour periods in October 1963.*

Traffic flow can be seen on the Average 24 Hour Traffic Volumes Map on page 27.

Street Layout

Throughout the community there are streets which are only one or two blocks in length. These can be expensive to government in water and sewer service and dangerous for citizens who are seeking fire and police protection. In addition, there are several dead end streets which have never been completed to connect with other streets. Also, there are many off-set streets which make for a higher collision potential of vehicles at intersections. Moreover, throughout the town there are intersections with acute angles creating poor visibility and necessitating awkward turning movements.

Street patterns of the past were usually uninteresting in housing developments. However, the most recent subdivisions in the community generally have abandoned the old standard of the block grid system. More recently streets have been designed to take advantage of the topography. Street patterns in the newer subdivisions of the community are not as monotonous, and they tend to discourage through traffic which is unwanted in residential neighborhoods. Areas in which streets follow the terrain can be served more efficiently with sewer facilities because these normally follow street rights-of-way and depend generally on topography for design.

Loop Streets

The CBD is in need of a circumferential loop to allow for better accessibility. Presently there is a half loop around the district with effective radiating streets from it. However,

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*Origin-Destination Traffic Route Study made at Fuquay-Varina, N.C. October 1963, (Raleigh, N.C.: The Planning Department of the North Carolina State Highway Commission in cooperation with The U.S. Bureau of Public Roads, U.S. Department of Commerce, December 1963).

most of these are of a residential nature and have not been constructed to handle large volumes and heavy vehicles.

Railroads

The town is served very adequately with railroad facilities. Although they have been a boom to the community in the past and still are a very vital factor in the economy, railroads have become, as the town has grown, barriers to development. One of the factors which has contributed to the retaining of separate identity of Fuquay Springs and Varina is the railroad. Between the two original settlements are several rights-of-way of which one is nearly 400 feet wide.

Varina is located at the center of an irregularly shaped star of five radiating branches of trackage. As each branch radiates from the junction, V-shaped parcels of land are created in between. The trackage forming these V's and the complex road system intertwining like tentacles have created physical barriers which never have been overcome and which will be difficult to overcome in the future. These barriers have shaped and guided the two original settlements to grow as they have until today, and it is likely that they will have a strong influence on the direction of growth in the future.

VACANT LAND

	Within Town Limits	In Fringe Area	In Planning Area
Woodland	386 acres	2,900 acres	3,286 acres
Crop Land	622	2,955	3,577
Pasture	7	66	73
Water	18	94	112
Residences	3	5	8
Buildings	1	--	1
Other	280	166	446
TOTAL	1,317 acres	6,186 acres	7,503 acres

Because of the large annexations of 1958 and 1959 in which there has been little urban development to date, there is a vast amount of area which may be termed vacant. This includes woodland, crop land, pasture, and water bodies. The largest expanses of vacant land in the town are to the southwest and northwest. These areas are almost wholly devoted to farming, and there are no public roads traversing them. However, they are dissected by railroads. These may contribute to their development if they evolve as prime industrial areas in the future. On the other hand, if residential growth seeks its way to these vacant areas, the railroads could become guides at first for locating housing and barriers later when expansion is desired.

Most of the vacant land in the planning area is developable. Generally, along creek beds is some land which is not "buildable." The most outstanding instance of undevelopable land occurs in the Neils Creek area in the southern section of the planning area.

There are several large gaps of vacant land between developed areas. One outstanding gap is the large parcel at the curve of Main Street north of the CBD. This land is surrounded entirely by urban uses. On the fringes of development there are several perforations created by extensions which disregard and fail to fill gaps between them. This is noticeable on the land use map particularly on the southern edge of development. Also, there are several insular instances of development which create gaps of vacant land between the main body and themselves.

All of the above cited cases present expensive problems to be considered by the town. For the community to extend water and sewer service and other facilities to an area beyond large vacant parcels is unnecessarily expensive. This is true because the town must construct and maintain service through vacant areas which neither use nor pay for the very conveniently located facilities which traverse them.

LAND USE ANALYSIS

	WITHIN TOWN LIMITS			IN FRINGE AREA			IN PLANNING AREA		
	Acres	% of Devel. Land	% of Total Land	Acres	% of Devel. Land	% of Total Land	Acres	% of Devel. Land	% of Total Land
Residential	278	43	14	143	25	2	421	35	5
Commercial	69	11	4	15	3	--	84	7	1
Industrial	21	3	1	26	5	--	47	4	--
Social & Cultural	66	10	3	144	26	2	210	17	2
Streets & Railroads	211	33	11	234	41	4	445	37	5
Vacant	1,318	--	67	6,186	--	92	7,504	--	87
TOTALS	1,963			6,748			8,711		

Vacant land ranks first in acreage of all categories in the town, fringe, and planning areas. The amount within the town limits represents 67 percent of the total. It is also quite high in the fringe and total planning area: 92 and 87 percent, respectively. However, it is pointed out that these percentages do not mean that this much land is undeveloped but that it is not developed by urban-type uses. Of the 8,700 acres of land in the planning area, 5,700 acres are developed by either urban or rural types of use. This represents about 66 percent of all the land in the planning area.

LAND USE PROBLEMS

Sprawl

In spite of the more recent tendency for residential development to sprawl, the town has managed somehow to keep up with service of water and sewer facilities to much of the community. This certainly does not imply that all residences are served, for there are some on the frontier of urban development and beyond which are not reached by town water and sewer service. The subdivision regulations which the community now enforces do not require the installation of minimum facilities such as water, sewer, curb and gutter, paved streets, sidewalks, or street lighting. Furthermore, the community has no fixed charges for water and sewer service improvements made to the systems other than for connection. The town pays the total costs for engineering and storm sewer installation. There are no front footage or acreage assessments for water and sewer installation. As a result within months after new subdivision development citizens of new areas come to the Town Board to request the installation of the above mentioned facilities. The recourse the town has depends on the amount of money set aside for service extensions.

It is recommended that the Town Board of Commissioners immediately adopt a resolution requiring front footage and acreage assessment for service installation.

Odd Shaped, Odd Sized, and Inaccessible Lots

In several parts of town there are odd shaped, odd sized, and inaccessible lots. In a few cases there are some lots which are unbuildable because of their odd shape and because of the requirements they would have to meet to satisfy the regulations of the zoning ordinance. Moreover, odd size lots also have a difficult time meeting certain requirements of the zoning regulations. In addition there are several inaccessible lots which exist in certain sections. When developed

these types of lots generally contribute to the degradation of fire and health standards and the general welfare of the town as a whole. Where there are lots of this nature, in many cases it is necessary to construct buildings with little regard to lot lines, setbacks, and emergency vehicle accessibility; many hardship cases may have to be presented to the Board of Adjustment.

Incompatible Mixture of Uses

As has been pointed out, in previous sections of the land use analysis, there are several examples of incompatible mixtures of use in the community. In some areas commercial and industrial uses have located in the midst of residential uses. These encroachers create undesirable noise, smells, and smoke, increased movement of traffic, decreased property values, poor appearance, and the like. Not only can commercial and industrial operations be guilty of encroachment, but the reverse of this can be true. Commercial and industrial uses should be protected from residential development just as well. Even single-family sections of a residential district should be protected -- namely from duplexes and apartments. Incompatible uses in certain areas of the community point up weaknesses in the zoning ordinance or in its application.

Incompatible Location of Uses

Some uses of the community are located in areas where they will not best serve. For example, several warehouses, auto dealers, and other large land consumers are located in the CBD. These tend to defeat the purpose of the Central Business District which is supposed to be a shopping center allowing for convenient accessibility to shoppers on foot. Service stations for instance in between shops not only make it necessary to do more walking but cut area down which could be used for off-street parking facilities and other shops in close to the core of the CBD.

Lack of Necessary Uses

In all parts of the community other than at school sites, there is a scarcity of park and recreational facilities. The school grounds may be adequate in size to serve the community, but in most cases they are too far from dwellings to facilitate the playground needs of little children. Distance becomes a disadvantage.

Barriers to Growth*

The greatest barriers to growth in Fuquay-Varina are the five tentacle-like railroad lines radiating out from the Varina Business District. These lines incorporated with the two commercial districts, the newly developing business strip between the two business sections, and the new shopping center have created a swath almost totally void of residential uses. This residentially barren area appears to be almost impermeable. To the northwest of this barrier is an area settled dominantly by Negroes. To the southeast is the heart of the community which is almost totally white. There has been very little mixture, and trends indicate that there will be none because the area to the northwest is expanding in a northwesterly direction and the section to the southeast is growing toward the southeast.

The Negro neighborhood to the northwest can be termed a barrier to the growth of white housing areas. Unless feelings change, this concentration of Negro housing will remain as a barrier to whites wanting to expand to the northwest. On the other hand, the white housing section is and will remain as a barrier to Negro expansion. Thus, each area (northwest and southeast) has been growing in generally opposite directions.

These generally are some of the outstanding problems in land use in Fuquay-Varina, namely: sprawl, odd and inaccessible lots, incompatible use mixture, poor location, lack of uses where needed, and barriers to growth. All these will be dealt with when the Planning Board formulates the land use and thoroughfare plans.

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* Refer to Racial, Commercial, Industrial, and Railroad Barriers on pages 51 and 52.

PATTERN OF LAND DEVELOPMENT

Development of land in the community has taken on a definite pattern. Uses have tended to isolate themselves in most cases. However, some mixtures which are not desirable have been created.

Residential Uses have very noticeably isolated themselves into several outstanding clusters. The most outstanding is located to the southeast of the Gulf branch of the Norfolk-Southern Railroad. This housing heart is almost exclusively residential. Generally, all other residential clusters are the same with little or no encroachment upon them by undesirable uses. The residential pattern of the community has oriented itself to commercial areas and school sites which are found in or near dwelling areas.

Commercial Uses are located in two outstanding areas, namely in the Varina settlement and the CBD. Both are located on major roads and are easily accessible from their immediate areas but not from all sections of the community. On Main Street between the two concentrations there is a commercial strip quickly developing. To the west of this strip is a new shopping center. The pattern of development over the years has been geared to connect the two major commercial areas of Varina and the CBD. Except for the newly developing strip, retail and service commercial uses abut residential concentrations. Warehousing operations which were in the past guided by the location of railroads are beginning to crop up on the fringes of development on major roads away from high land prices and congestion. This can be observed in the southern portion of the community along Main Street. In the past, tobacco marketing operations located in close to the CBD.

Industrial Uses have no outstanding concentration. These have developed generally along rail rights-of-way. However, there are several instances of industry which disregard the location of rail service; major roads have figured in their location. Utilities are most outstanding to the south of the town. The old and new disposal plants and the town dump are located in this area.

Social and Cultural Uses are located in most cases in areas which they serve. Exceptions to this are a church in the CBD and two out beyond residential development of any consequence. The schools of the community appear to be well located, namely near the center of their service areas. What has yet to be established is a pattern of parks and recreation facilities. Strategically chosen locations should be set aside for this type of development.

Vacant Land occurs throughout the community. The most obvious cases are beyond the development frontiers. However, there are some large parcels which are surrounded completely by urban types of development in close to the CBD. Perforations in the frontier are most outstanding to the southwest, south, and southeast. Here extending fingers of growth have left large open spaces.

In brief, the land development pattern consists of several elements, i.e., residential, commercial, industrial, etc., which have delineated themselves in most cases in clusters. These clusters, especially in the residential and social and cultural groupings, are almost entirely void of other types of uses. Particularly in the largest residential area are uses nearly pure. Here, there is hardly any mixture of incompatible uses.

FIVE TOWN COMPARISON

Listed in the following table are five selected towns of Wake County in which land use information was readily available. An attempt is made to relate Fuquay-Varina with other principal communities of the county in percentage of major land use groupings. In addition to land use percentages, population is given and the number of miles from Raleigh is listed. The purpose of this is to try to determine if there is a definite relationship to proximity to Raleigh and certain land use categories in the town. All towns listed have good highway access to Raleigh.

COMPARISON OF FIVE WAKE COUNTY TOWNS' LAND USE*

	1960 pop.	Miles from Raleigh	Acreage of Devel. Land	Percent of Developed Land				
				Res.	Cml.	Ind.	Social & Cultural	Streets and R. R.
Fuquay-Varina	3,389	15	636	43	9	3	10	33
Cary	3,356	5	713	55	2	1	12	30
Wendell	1,620	13	352	53	10	1	33	30
Zebulon	1,534	17	295	47	6	5	4	38
Apex	1,368	11	343	31	2	2	9	55
Average	2,253	12	468	46	5	2	14	37

* Land use figures for this table have been taken from several Division of Community Planning reports. Since all land use categories are not the same in different towns, figures for some groupings had to be combined to fit the general categories in the table. Percentages were taken from publications whose dates range from December 1962 through April 1964.

It appears that the farther the town is from Raleigh, the higher the percentage of land there is dedicated to commercial and industrial uses. On the other hand, generally, the closer the community is to Raleigh, the higher the

percentage of land devoted to residential uses. Fuquay-Varina is one of the farthest towns from Raleigh; the percentage of land devoted to residential uses is lower than the average, whereas the percentages of land dedicated to commercial and industrial uses are higher than the average. This emphasizes the fact that the 'bedroom' communities closer to Raleigh depend more on that city than the others farther away. Although more than one-fourth of the labor force of Fuquay-Varina and over one-third of the labor force of Middle Creek Township are employed in Raleigh, the town still has substantial acreages in the commercial use category.

There is no doubt that, more and more as the years pass, there is a keen competition developing between the satellite communities of Raleigh. These towns are vying with each other to attract industry and new residents to them. Although there are other factors involved in the analysis of the economy of a community, in the case of the satellite towns of Raleigh, land use percentages can be used as indicators to point out generally where the town stands competition-wise with the other communities of the county.

A comparison of Fuquay-Varina and Cary may be a good illustration. Fifty-five percent of Cary's developed land is residential while only forty-three percent is residential in Fuquay-Varina. On the other hand, nine percent of the developed land in Fuquay-Varina is dedicated to commercial use; in Cary it is two percent. In another use category the difference is not as significant, namely industry: Fuquay-Varina has three percent and Cary has one. From these comparisons it can be surmised that Cary has been more successful than Fuquay-Varina in attracting new residents. Fuquay-Varina has remained as a small trade center within the larger Raleigh trade area; Cary has lost its identity as such.

In brief, according to land use percentages Fuquay-Varina is still a relatively independent community as compared to the other satellite towns of Raleigh. However, new four lane highways, better automobiles, and the probability of suburban mass transportation are making Fuquay-Varina a part of a larger urban complex. The association with this complex must be accepted and Fuquay-Varina should gear its plans accordingly. In future land use for instance, more land should be set aside for residential uses than would be normally designated by an independent community.

In 1960, twenty-seven percent of the Fuquay-Varina labor force worked in Raleigh; in the future there will be a higher percentage of workers earning their livelihood in Raleigh and living in Fuquay-Varina. As a result a higher percentage of residential land than would normally be necessary should be set aside in the land use plan.

TRENDS IN LAND USE

Trends in land use have been changing in the past two decades. This can be attributed to the greater importance of the automobile, higher standards of living, and changing concepts on what is most desirable for a happy life. There have been some very definite changes over this period of time and they are evident in Fuquay-Varina. Uses in the community reflect the trends in the nation. Some national trends are listed as follows:

1. the trend toward the development of larger commercial areas with off-street parking facilities;
2. the trend toward increasing single-family lot sizes and more spacious residential development;
3. the trend toward the construction of single story industrial establishments on large parcels of land with services such as off-street employee and visitor parking;

4. the trend toward using more land for schools and other public structures;
5. the trend toward dedicating more land for parks and recreational areas;
6. the trend toward compacting neighborhood commercial activities into centers; and
7. the trend toward the moving of large land consuming businesses away from congested, high-rent shopping areas.

To cite a few instances of how Fuquay-Varina has reacted to these national trends, one could consider the larger lot sizes in new subdivisions and development on the frontiers of urban-type uses, or the shopping center on Wake Chapel Road. In addition, there is the creation of new off-street parking facilities in the CBD and the location of large tobacco warehouses on the southern periphery of the town. These are all indications that land use standards are changing in Fuquay-Varina. Land requirements are changing according to the wants and needs of the citizenry. In planning for future land use, these trends should be considered carefully.

LAND USE AND ZONING

The land use of the community reflects the effectiveness of the town zoning ordinance. Although the amount of existing mixture of uses in residential areas is not now severely detrimental to the community, the most exclusive residential sections have relatively little legal protection from uses which might encroach upon them. For instance the regulations in the Fuquay-Varina Zoning Ordinance for the residential zoning district, in addition to single-, two-, and multi-family dwellings, allow for boarding houses, lodging houses, hotels, clubs, and the like. These are allowed in any

residential area of Fuquay-Varina. The ordinance allows for an undesirable mixture of uses according to today's standards. Ten or twenty years ago the zoning ordinance may have been protective; today is has little power. In sum, the tool most responsible for the control of land use in the community is zoning. A good zoning ordinance and a conscientious town board and planning board can preserve and induce good land use practices in the town.

HOUSING

Condition and appearance of housing in the community, when considered with existing land use, can be very good indicators of growth and of blight. Normally, where average and above average housing exists, there is the frontier of growth in the community. On the other hand, where deteriorating and dilapidated housing exists, there are the blighted and social problem sections of the community. This, however, is hardly true in all sections of Fuquay-Varina. Often among the best residences in the community there can be found deteriorating dwellings. Also, in the older sections of the town there can be found many average and above dwellings.

In Fuquay-Varina, most above average housing is on the growth frontier and the largest areas of deterioration are in the oldest and Negro sections of the community. This will be delved into more specifically after a few preliminary explanations.

THE SURVEY

The inventory of housing appearance and condition was made in March 1964. It was conducted to determine the physical living conditions of the residents and the distribution of the above average, average, deteriorating, and dilapidated dwellings in the planning area. Each dwelling structure was classified by external appearance. The condition was determined by several features which include structural appearance of the principal building, condition of accessory buildings, lot size and shape, and general property maintenance. The information accumulated in the survey was plotted on the External Housing Appearance Map on page 47.

The four condition categories in which housing structures could be placed are listed and defined as follows:

1. ABOVE AVERAGE - The general appearance, size, and value of the structure and land are above standard; only routine maintenance is needed to keep the property in this high classification.

2. AVERAGE - The appearance and condition are good; painting and replacement of minor parts such as shingles and siding in addition to routine maintenance may be needed to elevate the property to the above average ranking.

3. DETERIORATING - The general condition and appearance of the dwelling and lot are below standard; the building is in need of major repairs, and extensive maintenance is necessary to bring the condition of the property up to average.

4. DILAPIDATED - The dwelling structure is uninhabitable; it is probably more practical to raze the building than to reconstruct it since restoration and maintenance would generally be prohibitively expensive.

DISTRIBUTION OF HOUSING CONDITIONS

Within the various concentrations of residences described in the land use analysis, there are many pockets of dwellings which are either above or below average. The pockets can be seen on the Generalized Housing Appearance Map. The residential heart of the community east of the Gulf Branch of the Norfolk-Southern Railroad and south of Main Street has an overwhelming number of dwellings which have been classified as average. The extremes, above average, deteriorating, and dilapidated conditions, have not penetrated the "heart" but have tended to be located on its

periphery. On the housing map, groups of pockets have been encircled to show the concentrations of extremes around the "heart."

Above Average Housing

Areas in which above average housing appearances are most dominant are generally found to the east of Ennis Street and to the west of S. Main Street. The largest area is located north of Vance Street and South of Aiken Parkway between the town limits and Ennis Street. Here the homes can be classified as middle class with a sprinkling of more expensive dwellings. The structures in this area are relatively new, having been built in the late '50's and early '60's. Lot sizes are well above the norm for the town and the setting and appearance are pleasing to the eye. The street pattern has been laid out in accordance with the contours of the land and the shoreline of a pond in the vicinity. Yard and accessory building maintenance in the area is good.

Another area where appearance is above average is on the south side of Holland Road just east of Angier Road. In this area the land is rolling to hilly. The streets follow the contours of the land and the homes of high quality seem to be built to fit into the terrain. Lot sizes are among the largest within the town limits; they run from three quarters to one full acre and larger. Maintenance of the yards and accessory buildings in the area is good.

To the southwest of Reynolds Drive are a number of beautiful homes which are well kept and have large spacious lots with scattered trees on rolling land. This pocket of homes with the others which have been classified as above average within the town limits include nearly all the dwellings in this category. There are, however, several which are above average located throughout the "heart" of the Fuquay-Varina residential area but in no outstanding concentrations.

Two pockets of above-average homes beyond the town limits can be found on Holland Road in a subdivision which has lot sizes of no less than an acre and on U. S. 401 south where older homes on spacious wooded lots in rolling hills overlook the highway.

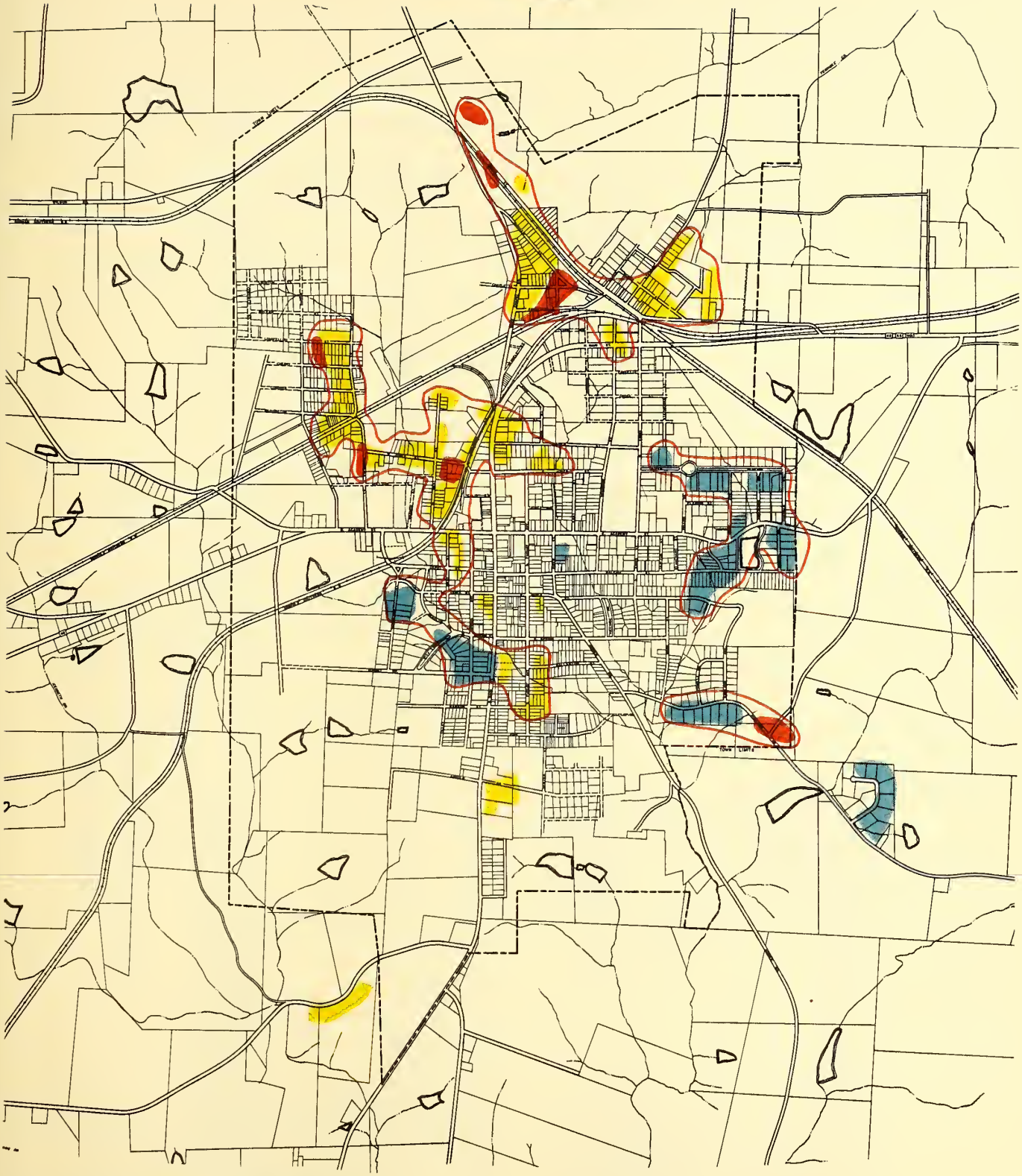
Deteriorating and Dilapidated Housing

All the major pockets of deteriorating and dilapidated housing are located along or near four of the five railroad spokes radiating from the Varina section of the town. The largest is located in the triangle bounded by the Charlotte branch of the Norfolk-Southern Railroad, the Durham branch of the Durham and Southern Railroad, and Wake Chapel Road. In this area only six homes were found to be average; twenty-two were listed as deteriorating; sixteen are recorded as dilapidated. The survey classifies dilapidated housing as uninhabitable. Surprisingly, all dilapidated dwellings were occupied at the time of the land-use survey. All streets except Wake Chapel Road are unpaved, graded dirt. The majority of the homes are unpainted and weather worn. Most have tin or tar-paper roofs; many have sagging walls and roofs. In a number of cases homes are not set back from the street, and there is little space between structures. Much of the area is unkempt; where grass and shrubbery grow they are untrimmed. Old cars, trash, and junk can be seen at many locations. Accessory buildings and warehousing in the area are no better in condition than the obsolescent dwellings. Apparently occupant ownership in this section is low and most landlords are investing as little as possible or nothing in improvement. The town evidently is not enforcing the codes which it has in its hands to prevent the deficiencies and obsolescence which exist in this area. These are the building codes including fire, electrical, plumbing standards, and the zoning ordinance applicable to the land area within the town limits.

Moreover, a code which would be more applicable to implementing remedial action in this area is a minimum housing code which the town does not presently have at its command.

On the west side of Stewart Street just north of the Varina Business District and along Broad Street to the east of the district is another pocket of below average housing. Here homes are generally in a deteriorating state. Lot sizes are not extremely small but many parcels are unkempt. Along Stewart Street are open storm drainage ditches; grass and shrubbery are not abundant in yards. Houses are unpainted and in need of repair; roofs are generally rusty sheet metal. An attempt has been made in the recent past to improve housing in this section by constructing new concrete block structures. However, if these are not better maintained, they in time will warrant a deteriorating classification. The only paved road in this pocket is Stewart Street which is a radial leading out from the town to the north.

To the northwest of the Central Business District, across the Fayetteville branch of the Norfolk-Southern Railroad and straddling the Charlotte branch of the same railway, are two large pockets of deteriorating dwellings. Within these areas are three smaller sections containing dilapidated homes. Here, conditions can be found comparable to the "triangle pocket" discussed above, but problems here are not nearly so severe. Housing in this area is generally kept in a better state, and the percentage of deterioration and dilapidation is not nearly so great. However, they exist to the extent that they present the major problem of the area. Comparable conditions such as sagging walls, rusty tin roofs, unpainted siding, and torn tar paper exist in this pocket just as they do in other areas of deterioration. Most of the streets are unpaved in this section, and there are open storm drain ditches. Debris, old inoperable automobiles, and unkempt accessory buildings are commonplace in residential yards.



FUQUAY - VARINA
NORTH CAROLINA

EXTERNAL HOUSING APPEARANCE

AREAS OF CONDITION EXTREMES

CONDITION POCKETS

- ABOVE AVERAGE
- AVERAGE
- DETERIORATING
- DILAPIDATED

N

W E

S

SCALE IN FEET

The preparation of this map was financed in part through an urban planning grant from the Housing and Home Finance Agency, under the provisions of Section 701 of the Housing Act of 1954, as amended.

THIS MAP WAS PREPARED FOR THE TOWN OF FUQUAY-VARINA IN 1962 BY THE DEPARTMENT OF CONSERVATION AND DEVELOPMENT DIVISION OF COMMUNITY PLANNING.

FUQUAY-VARINA HOUSING

HOUSING APPEARANCE BY HOUSING TYPE

Within Town Limits

	Single Family	Two Family	Three Family	Four Family	Trailers	Vacant Units	Totals	Percent of Total	Number of Dwelling Units
Above Average	52	--	--	--	--	--	52	5.9	52
Average	553	12	4	1	10	2	580	66.0	605
Deteriorating	192	19	--	2	--	1	213	24.2	239
Dilapidated	33	1	--	--	--	3	34	3.9	38
Totals	830	32	4	3	10	6	879		934
Percent	93.6	3.6	.5	.4	1.1	.8			

In Fringe Area

	Single Family	Percent of Total	Vacant
Above Average	15	5.4	0
Average	166	59.7	1
Deteriorating	83	29.8	4
Dilapidated	14	5.1	4
	278		9

DENSITY OF HOUSING

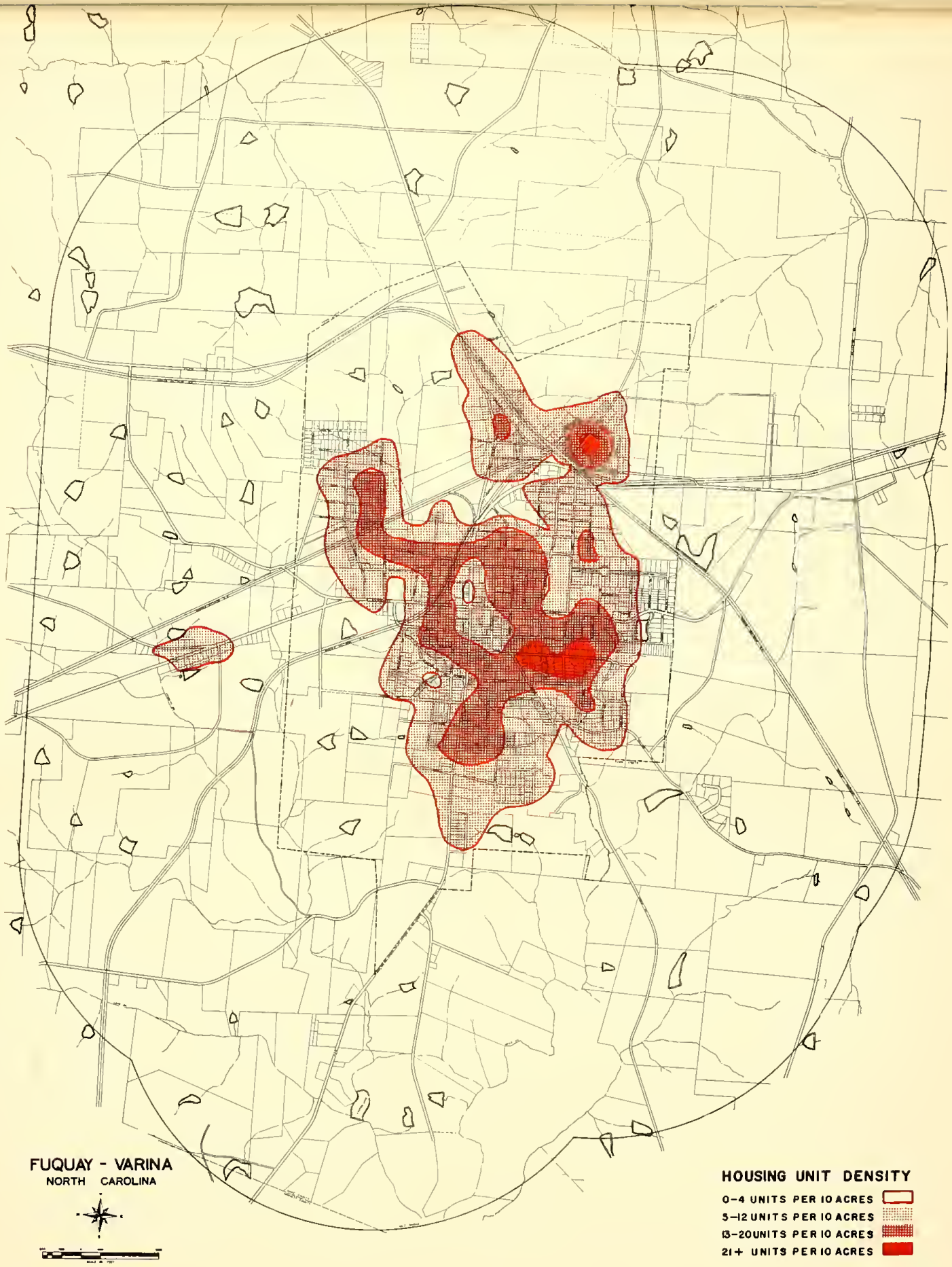
The land use analysis points out that 278 acres are occupied by residential uses. In this chapter it has been revealed that there are 879 housing structures in which there are 928 dwelling units. With these figures it is calculated that there is an average number of 3 1/3 housing units per acre of developed land within the town limits.

HOUSING DENSITY IN FUQUAY-VARINA

Housing Type	Number of Units	Acreage	Average Number of Housing Units per Acre
Single Family	830	265	3.1
Two Family	64	7	10.6
Multi-Family	24	2	12.0
Mobile Homes	10	3	3.3
Vacant Units	6	3	2.0
	934 (total)	280 (total)	3.3(average)

The housing unit density map on page 50 shows that the heaviest concentrations of housing are just west of the Central Business District and just north of the Varina Business Section. Surprisingly, the heavier concentrations are not found where the worst conditions are located. Densities where deterioration is dominant are from medium to low. On the other hand, the highest densities in the community are where housing conditions are average and above.

This phenomenon is contrary to what one might expect. In urban areas one normally assumes that where there are heavy concentrations of population there also can be found blight and obsolescence. Highrise and "Georgetown" housing are exceptions to this, but generally one associates slums with high concentrations of housing in a town. Perhaps manmade barriers and race have something to do with this contrary situation in Fuquay-Varina. It is discussed in the next section.


FUQUAY - VARINA
NORTH CAROLINA
HOUSING UNIT DENSITY
0-4 UNITS PER 10 ACRES
5-12 UNITS PER 10 ACRES
13-20 UNITS PER 10 ACRES
21+ UNITS PER 10 ACRES

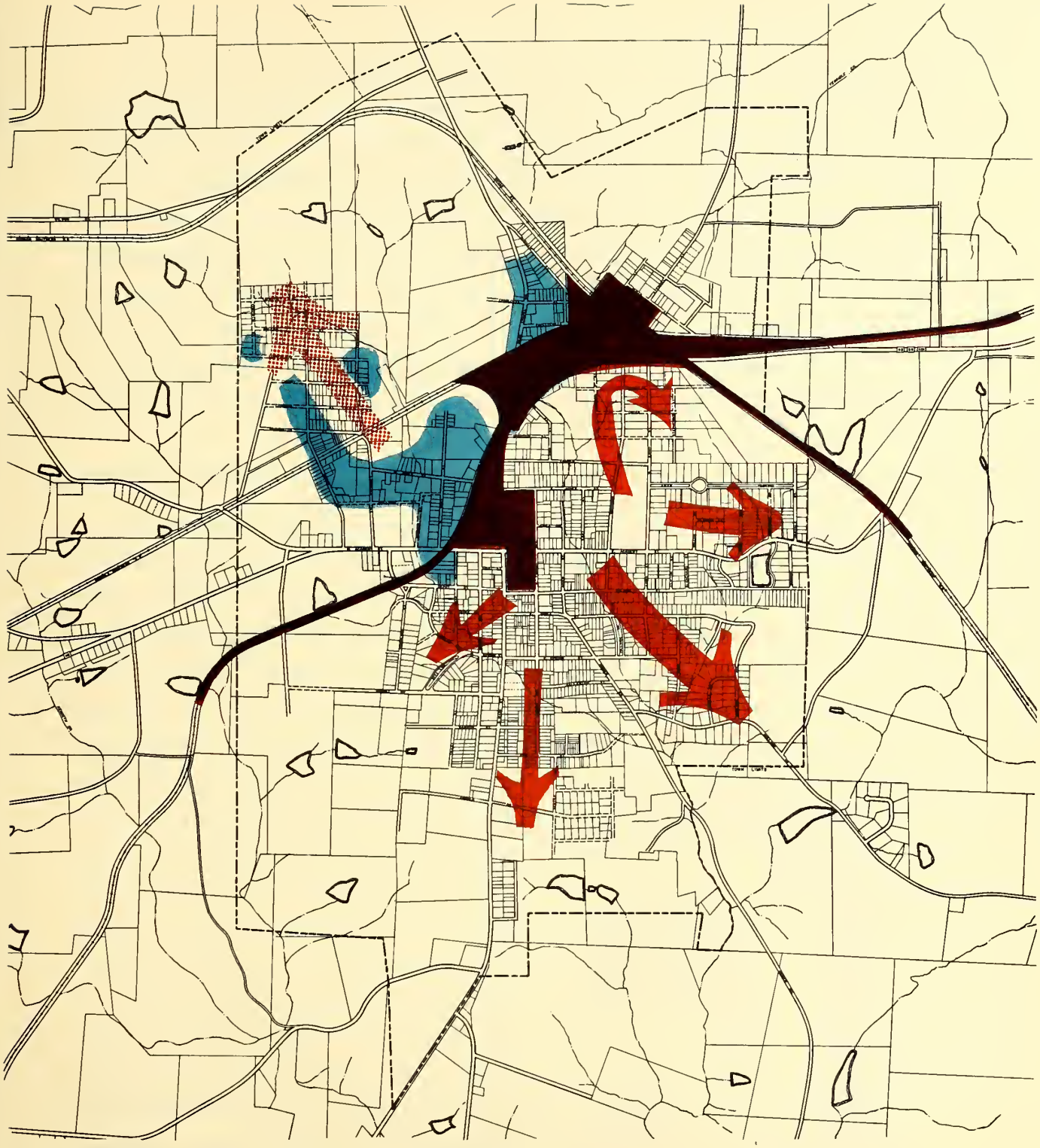
The highest number of housing units in just one acre can be found at the southeast corner of W. Academy Street and West Street. Here, in one acre there are approximately ten dwelling units. The American Public Health Association recommends, for healthful living conditions, a maximum of seven housing units per acre in single family dwelling areas.

RACIAL, COMMERCIAL, INDUSTRIAL, AND RAILROAD BARRIERS

Residential districts in many communities for some reason or another, have the tendency to expand and grow to the north and northwest if no major barriers confront them. This is the case in Fuquay-Varina also but only for the Negro housing district which is already located in the northwest. The main body or "heart" of residential concentration as outlined in the land use analysis is almost totally white; it shies away from expansion to the northwest partially because of the settlement of Negroes which is in that area.

Commercial, industrial, and railroad land also has had a major part in stymieing the growth of the "heart" to the north and northwest. The Central Business District with the industrial complex to its north has blocked access for a stretch of nearly six blocks along Main Street. The developing commercial strip and existing industry along with the five railroad branches and the Varina Business District are impenetrable on the north. This is borne out on the Residential Growth Barrier map on page 52.

As a result of these barriers, white residential growth from the heart of Fuquay-Varina has had to seek relief to the east, southeast, and southwest. Growth pressing to the north and northwest has "bounced off" the barriers and probably has caused the heavier concentration of housing ironically found in the more prestigious section of town, namely: in the "heart" of the community.



FUQUAY - VARINA
NORTH CAROLINA

BARRIERS AND RESULTANT RESIDENTIAL GROWTH

NEGRO HOUSING

RAILROAD, COMMERCIAL, & INDUSTRIAL BARRIERS

WHITE RESIDENTIAL GROWTH FRONTIERS

NEGRO RESIDENTIAL GROWTH FRONTIER

N

W E

S

SCALE IN FEET

The preparation of this map was financed in part through an urban planning grant from the Housing and Home Finance Agency, under the provisions of Section 701 of the Housing Act of 1954, as amended

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The area just north of the Varina Business District and surrounding the golf course has great potential for becoming the new prestigious residential section of the community. The rolling hills, the proximity of the golf course, and the location to the north of the community all contribute to its desirability. Growth barriers in this area are nil. Procuring the land may be the only problem encountered in this section. Some landholders refuse to sell land in order that it may remain in the family to provide for future security. Often times security is measured by the landholdings one has.

HOUSING TENURE AND VACANCY*

The 1960 Census showed that there were 2,239 housing units in Middle Creek Township. Of this number 1,015 units were owned by their tenants. There were 870 whites who owned dwellings and 145 nonwhites who owned theirs. Only 14.3 percent of the owner occupied homes were held by nonwhites. This may be one of the reasons for obsolescence in the Negro neighborhoods of Fuquay-Varina. It has been found that where owner occupancy is low there also housing conditions generally are low; nonresident owners invest as little as possible if it is not necessary, especially when there is no competition to lure their tenants away. Obviously a larger percent of homes are rented by nonwhites. Of all renter occupied units in the township, nonwhites live in 32.5 percent.

Vacancy was recorded in the Housing Appearance Survey in March 1964; only 6 vacant units were found in the town and 9 in the fringe area. In contrast to this, the U. S. Census recorded 160 units vacant in Tract 31 with 43 available vacant: the remainder apparently were unavailable for sale

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* U.S. Department of Commerce, Bureau of the Census (unpublished data) 1960. Information was not available for Fuquay-Varina then Fuquay-Springs; therefore, this section deals with census tract 31 of Wake County which is comparable to Middle Creek Township.

or rental. The surprising difference in figures between the two surveys other than size of area may be accredited to the methodology employed. The U. S. Census conducted a "house-to-house" survey while the Division of Community Planning carried out a "windshield" inventory. The latter method leaves some room for error because in many cases to determine from the street whether a home is occupied is speculative. All vacant housing amounted to 7.1 percent of the total number of housing units in Middle Creek Township. The amount of available vacant housing is low. However, the percentage of "unavailable" vacant units seems to be rather high. This may be caused by the number of vacant dwellings in the farm areas left by farmers migrating to the urban areas. When farms are consolidated, tenant dwellings often remain vacant.

SUMMARY AND RECOMMENDATIONS

The survey has revealed that twenty-eight percent of the homes within the Fuquay-Varina town limits are deteriorating and dilapidated. This means that nearly one-third of the structures have a general condition which is below standard, and it would take a major investment for each house in these categories to bring it up to average. Four percent of these dwellings, because of prohibitive expense would have to be razed; restoration of these dilapidated structures would be impractical. On the other hand, seventy-two percent of the homes in the community are average or above.

In the fringe there are more homes, percentage-wise, in the deteriorating and dilapidation classifications. Dwellings recorded in these categories amounted to thirty-five percent of the total. An explanation to this may be that only the electrical code enforced by Wake County is applicable to the homes in this area. Within the town limits structures are subjected to more codes and thus are kept in a relatively better condition. Nevertheless, it is apparent that the

codes are not being enforced stringently especially in the Negro portions of the community where deterioration, dilapidation, and obsolescence are the rule.

It has been found that non-ownership, deterioration, and poor community facilities go hand in hand. The most decrepit neighborhoods of the community are where nonwhites live, where the majority of streets are unpaved, where building codes are unenforced, and where owner occupancy is nil. Some deteriorating white neighborhoods can be found to suffer from the same shortcomings. Especially in the deteriorating parts of the Varina section is this true. Over-all, the neglected areas of the community (as far as good community facilities such as water, sewer, street lighting, recreational facilities, street paving, etc. and code enforcement are concerned) are where physical and social conditions are at their poorest.

The regimentation of housing conditions into specific areas suggests that different standards are being used in enforcement of the building, plumbing and electrical codes in different sections of the community. In other words, in some areas conditions are allowed to exist that would not be permitted elsewhere.

It would behoove the community to fight the ferment of blight by placing into action several of the following suggestions.

1. Enforce more stringently the codes the community has at its command to fight deterioration.
2. Use the same standard of code enforcement in all areas.
3. Institute major paint-up and fix-up campaigns in the deteriorating sections involving landlords and tenants.
4. Pave secondary and minor streets with curb and gutter in deteriorating sections.

5. Incorporate the necessary provisions in the new zoning ordinance that will eliminate and deter conditions which are conducive to blight and that will insure the proper development of vacant land.
6. In the new subdivision regulations increase the responsibilities of the developer by requiring improvements such as paved streets with curb and gutter, water and sewer, street lighting, etc.
7. With the power of condemnation, raze the dilapidated housing structures in the community after making available comparably priced housing for those evicted for destruction purposes.
8. Adopt a minimum housing code.

WATER & SEWER

Water Supply and Sewage Disposal are very important determinants which must be considered in the preparation of the community plans of the future. This chapter deals with Fuquay-Varina water, namely: source, supply and yield, storage and treatment facilities, analyses of chemical and physical properties, amount for fire protection, and distribution area. In addition, needs of the future are discussed.

Sewage disposal is delved into in the second section of this chapter. Discussion is given on the three methods of sewage disposal used in the community and the four collection nets of mains in the municipal sewage system. Lastly, community growth and sewerage are considered.

WATER SUPPLY

Fuquay-Varina renders many services to its citizenry. Probably the most valuable is the clean and abundant water supply delivered through an intricate system of mains and laterals. A good water supply is fundamental for the continued good health and welfare of the citizens. Moreover, quality and quantity of water are extremely important determinants in the growth of the Community.

Source*

The town operates four municipal wells to supply the community. Wells 1, 3, 4, and 5 are 300, 400, 384, and 480 feet deep, respectively, and their yields are reported to be 10, 50, 30, and 230 gallons per minute, respectively. Three wells are located in the northwestern section of the community; the other is located on Depot Street in the western portion just south of the Norfolk Southern Railroad.

Storage and Treatment

Treated water is stored in a clear water well whose capacity is 56,000 gallons. Treatment to the raw water includes aeration, coke filtration, prechlorination, coagulation with lime and alum, pressure filtration and post-chlorination. Finished water is also stored in two elevated tanks whose capacities are 100,000 and 200,000 gallons. Fuquay-Varina's public water supply after treatment is considered to be

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* Chemical and Physical Character of Municipal Water Suppliers in North Carolina, (Raleigh: North Carolina Department of Water Resources, Division of Stream Sanitation and Hydrology, 1961), p. 75.

Moore, Gardner, and Associates Engineering Firm in Asheboro, North Carolina.

Town Manager

Town Mayor

generally suitable for human consumption when compared with U.S. Public Health Service standards.

From the wells, water is transported through four and six inch raw water mains to the filtration plant north of Jones Street and west of the Norfolk Southern Railroad. Raw water is transported from 1,500 to 3,500 feet to the filter plant depending on the various locations of the wells.

Analysis*

The U. S. Public Health Service has listed standards pertaining to chemical characteristics of water supplies as a basis of quality control. These standards are used by the North Carolina State Board of Health which inspects municipal water supplies routinely. It is suggested that chemical substances should not exceed those listed in the following if there is a more suitable source available.

CHEMICAL & PHYSICAL PROPERTIES OF WATER*

	Iron and Manganese	Magnesium	Chloride	Sulfate	Total Solids
U.S. Public Health Service Standards	0.3 ppm	125 ppm	250 ppm	250 ppm	500-1000 ppm.
Fuquay-Varina Municipal Supply					
Well 1	6.6	2.7	3.9	1.9	155
Well 3	.26	3.0	5.1	12	164
Well 4	8.8	1.7	4.5	19	150
Well 5	1.7	1.7	3.9	18	151
Finished Water	.68	1.7	6.0	18	157

*North Carolina Department of Water Resources, op. cit., p. 75.

It appears that the municipal water supply meets most recommendations of the U. S. Public Health Service. The table on the preceding page shows one instance of exceeding the maximum suggested; iron and manganese standards are not met by the treated water. The Health Service recommends that a suitable water supply should not contain iron and manganese in excess of 0.3 ppm (parts per million); the Fuquay-Varina finished water supply has .68 ppm. In addition to being a general nuisance and expense to the citizens as far as discoloring clothes and plumbing fixtures are concerned, iron and manganese can reduce the efficiency of water distribution. Excessive amounts of these minerals in the system contribute to the development of plant life in the mains and laterals. The plant life develops in the form of clumps and slime thus reducing the inner dimensions of mains and the freeness of passage. Plant growth in the system can be controlled by adding copper sulfate or chlorine to the water.

Available Supply and Yield

The pumps at the four wells are capable of lifting and injecting into the system 320 gallons per minute, 19,200 per hour, or 460,800 per day. These figures can be cited as the theoretical maximum yields which are determined arithmetically from the total maximum yields of all well pumps in the system. It is pointed out that Well #1 is an auxiliary facility and it is not in operation at all times. Wells 3 and 4 each supply twenty-five percent of the water and Well 5 emits seventy-five percent. In addition to pump capacity theoretical maximum yield depends on an unending supply of water. Nevertheless, the average consumption and maximum consumption figures are below the theoretical figure.

FUQUAY-VARINA WATER CONSUMPTION*

	Gallons Per Minute	Gallons Per Hour	Gallons Per Day	Gallons Per Capita Per Day
Average Consumption	191	11,458	275,000	80
Maximum Consumption	226	13,541	325,000	94
Theoretical Maximum Yield	320	19,200	460,800	136

Water For Fire Protection

Fuquay-Varina is served by 123 fire hydrants. All are located within the town limits distributed at distances generally no farther than 500 feet apart. The highest residual pressure measured in fire flow tests was listed as 60 pounds by the National Board of Fire Underwriters' tests in 1961 in the Central Business District. The lowest pressures recorded were found in the Negro neighborhood in the northwest section of the community. Here, although static was relatively high, residual pressure dropped below 20 pounds, the recommended minimum suggested by the Underwriters. The uses here are residences, a high school, and tobacco warehousing. Because of the large physical plants of the school and warehouses both residual pressure and pumper flow figures should be comparable to those found in the Central Business District. Finished water is stored in two elevated tanks on North Main Street between Woodrow and King Streets; the tanks capacities are 100,000 and 200,000 gallons. As fire hydrant distance from these tanks increases, inversely, the residual pressure and pumper flow generally decrease. Shown on the next page are the results of the Fire Underwriter's test made in 1961.

* Figures and information were received from the North Carolina Board of Fire Underwriters in Raleigh.

NATIONAL BOARD OF FIRE UNDERWRITERS TEST RESULTS
IN FUQUAY-VARINA - 1961*

Location of Tests	Static Pressure in Pounds	Residual Pressure in Pounds	Flow Gallons (Per Minute)	Pumper Flow Gallons (Per Minute)
Business District Main & Depot Streets	76	59	1,125	2,130
Business District Academy St. & Fuquay Avenue	76	60	1,040	2,040
School & Residential District Ennis & Church Streets	63	45	990	1,590
Residential & Business District Stewart and Broad Streets	56	50	1,050	2,760
Residential District South Main & Arnold Drive	70	20	650	650
Residential & Warehousing District Washington & Bridge Streets	56	10	480	420

* To produce the above figures, static pressure was read at a given hydrant. Then another hydrant in the vicinity was opened to permit flow; at the same time the pressure was read again at the first hydrant. This reading is termed the residual pressure, namely: the pressure existing with the second hydrant open. Fire Underwriters standards require a residual pressure of at least 20 pounds. This figure is calculated to be that which will overcome the friction and pumps in the system.

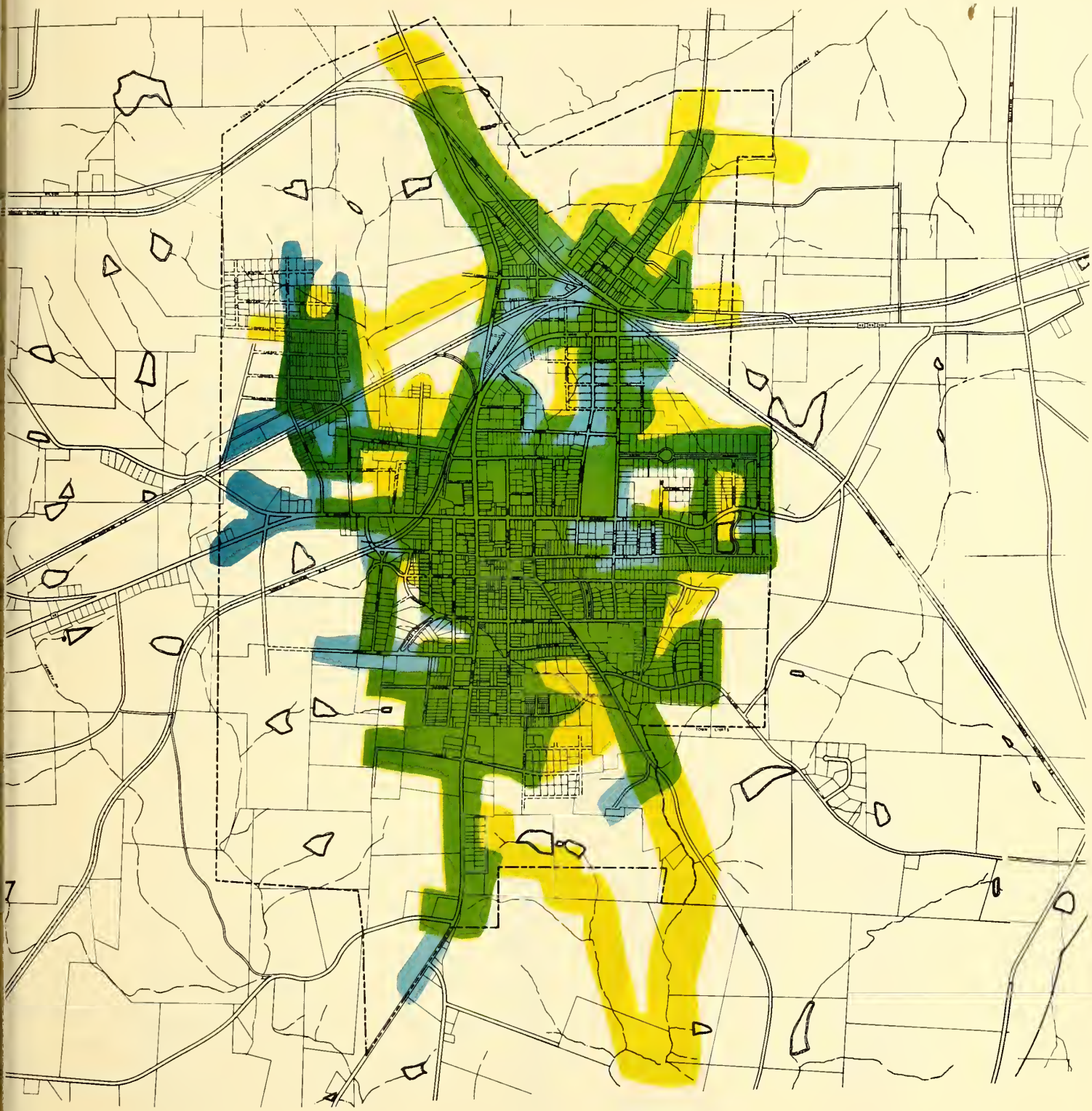
Distribution

The community has a water distribution system which consists of lines that run in size from 3/4 inch to 12 inches. The smaller lines are used as laterals running from the larger lines or mains to the consumers in the system. In Fuquay-Varina the filtration plant is connected to the distribution system with an 8 inch main. This main runs up and down Main Street and is connected to the two water towers to the north. These high tanks are used for storage and to maintain a high pressure in the system. From these tanks the largest mains in the system extend; these are 12 inch pipes. As water travels away from the tanks, the pipage generally gets smaller in diameter from 12" to 10" to 8", etc., until it reaches the consumers connected to the system. The reduction in size in the mains and pipes in the system helps to maintain a high pressure in the system and makes it more convenient to make connections to the consumers.

Nearly all of the developed areas of the community are served by municipal water. There are five major pockets which are unserved; four of these areas are subdivided, of which two are partially developed. Upon the development of these areas or soon after, the town government will be approached to service these sections. Much of the burden will be borne by the Town. It is recommended that the Town incorporate into their ensuing subdivision regulations provisions for land developers and subdividers to install water mains and connections at standards the town dictates.

Planning and Water Supply

A clean and abundant water supply probably is the most important service that a town can supply its citizens. This service naturally must figure into the planning of the community's future. Water of high quality in abundant quantities will be needed in addition to the supply the town now enjoys. Since the town does have the problem of finding great quantities



FUQUAY - VARINA

NORTH CAROLINA

SCALE IN FEET

N
W E
S

SEWER AND WATER COVERAGE

WATER ONLY

SEWER ONLY

WATER AND SEWER

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THIS MAP WAS PREPARED FOR THE TOWN OF FUQUAY-VARINA IN 1963 BY THE DEPARTMENT OF CONSERVATION AND DEVELOPMENT DIVISION OF COMMUNITY PLANNING

of water and since it does not have a surface source, it should continue its search for substantial ground sources and possibly a surface source. The low fire flow and residual pressure readings made in the Fire Underwriters test of 1961 should be rectified by making alterations in the distribution system or by adding additional elevated tanks to the system. If the Town continues to use well water with an excessive amount of iron in it, steps should be taken to treat the water with techniques that will eradicate these excesses. Population projections do predict a substantial growth in this decade and the next; Fuquay-Varina may double its population in the next sixteen years. By 1980 there may be 6,400 people residing within the town limits.

Prospect

The Town is now in the process of sinking a new well. Advance reports state that from 300 to 500 gallons per minute could be produced. The new well could render Fuquay-Varina's quantity of water to be sufficient for some time in the future.

SEWAGE DISPOSAL

Wherever humans dwell preservation of good health is of utmost importance. Epidemics and communicable disease always have been the dread enemies of towns. If strides are not taken to prevent and overcome the menace of disease, sickness and even death can become rampant. One disease menace to man is body waste; removal of body wastes from the places where humans live and work has been a problem to solve since time immemorial.

Municipal Sanitary Sewer System

Wastes are disposed of by three methods in Fuquay-Varina. The most important method is through the municipal sanitary sewer system. Nearly every home, commercial establishment,

and industry is connected to this public system. The sewer net is designed to transport wastes away from where people reside and earn a living so that it will not accumulate to create unsanitary conditions which are conducive to the spread of disease. At the depository end of this intricate system of laterals, mains and outfalls is a treatment facility designed to chemically break down the wastes in order that they may be introduced into another more natural medium of transport without contaminating it, namely: Neils Creek.

To take the place of an outmoded and overworked plant, in 1963 the Town constructed a new $500,000 sewage disposal unit. The new facility is designed to process up to 600,000 gallons of sewage per day. Presently the plant handles 300,000 gallons per day on the average.[1/] However, the State Division of Stream Sanitation and Hydrology reports that on days of heavy rainfall, 1.19 million gallons have passed through the plant. The average number of gallons per capita per day, passed through the system is about 115. This figure was determined by dividing the number of subscribers to sewer service (2,770) into the average 300,000 gallons processed per day.

The present plant is designed to serve a population of 6,000; the community's 1960 population was listed as 3,389 by the U. S. Census Bureau. Projections indicate that the Town may have a population of 5,078 by 1970 and 6,445 by 1980.[2/] If these projections hold true over the years, the Town will have to plan on having to build an addition to the plant to be completed by 1977 when the population would be

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1/ Personal conversation with the Town Manager.

2/ Population and Economy: Fuquay-Varina, Department of Conservation and Development, Division of Community Planning, Raleigh, June 1964, p. 28ff.

6,037. However, new industry may move the addition date up several years, depending on the industry type. The plant can be expanded by 100 percent at a relatively low cost. 1/

Septic Tanks and Outdoor Toilet Facilities

Beyond the reach of the municipal sanitary sewer system, waste is disposed of through the use of private septic tanks and outdoor toilet facilities. In large expanses of land undeveloped by urban type uses on nearly all sides of the heart of the Town, there can be found disposal facilities of this nature. Most of this undeveloped area has been annexed in recent years. Apparently, the only areas where the use of septic tanks and outdoor toilet facilities might be undesirable are in the vicinities where the Cecil, Durham, and Congaree Fine Sandy Loam soil types are located. The Cecil and Durham types are located to the southeast and southwest of the Central Business District and residentially developed areas. The Congaree type is found adjacent to stream beds. Here surface waters have a more difficult time percolating through the generally impermeable soil whose watertable is generally high. Especially would the Congaree type be unsuitable for drain field and open toilet use. This soil is periodically inundated in the Fuquay-Varina area because of its proximity to streams. 2/

Neils Creek Drainage Area

The municipal system has four major outfalls. There are two large outfall areas and two which serve smaller sections. The three which serve the more densely settled sections of town tie into the principal 24 inch outfall line in the southeastern section of the community. Flowing into this main 24 inch pipe are 12 inch and 18 inch pipes which parallel each other. The 12 inch pipe was the original

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1/ Town Manager, op. cit.

2/ See pages 73 and 74.

main outfall line, but now it has been supplemented by the 18 inch pipe. The first treatment plant was located in the southeast section of the Town; the new plant lies in an area about 2,400 feet to the SSW beyond the corporate limits on Neils Creek.

The Western Collection System serves the area generally found to the west of Main Street and Wake Chapel Road as far north as the Durham and Southern Railroad and as far south as Arnold Street. The uses served in this area consist primarily of residences. However, one major industry, two schools, and the hospital are connected to this outfall. Apparently, none of these uses are a burden on this system. All sewage flows by gravity in this collection area. A 10 inch outfall main delivers sewage collection to the principal outfall line. Extension of this system could be made to the north as far as the Durham and Southern Railroad. To the west, extension would have to be limited to a line running in a northwesterly-southeasterly direction terminating at the northeast-west curve in the railroad and the disposal plant.

The Central Collection System bounded generally by Main Street on the west, by Ennis Street on the east, and by the developed areas of Varina on the north, serves several industrial establishments, the Central Business District, the Varina Business District, the shopping center, the Main Street commercial strip, a school, and the largest concentration of residences in the community. The majority of this section is served by gravity flow sewers. However, the section to the north and northwest of the Varina Business District must be served by a lift station which forces sewage into the Central Collection System at Stewart and North Streets. Sewage collected by this system flows into a 10 inch outfall line before entering the main outfall.

Any significant extension to the system would require the use of the existing force main and lift station or additional comparable facilities.

The area to the east of Ennis Street is served by the Eastern Collection System. This section is exclusively residential; the collecting outfall is 12 inches in size. Northern expansion limits to this system without having to add "forced sewage" facilities are along U.S. 401. To the east, East Academy Street extended and Mitchell Road are the limits to gravity flow. However, beyond these thoroughfares, another outfall could be constructed without having to build force mains; a minor stream in this area flows toward the main outflow and meets it at the old treatment plant.

The smallest of the four systems is the Southern Collection System. Its 12 inch outfall serves South Main Street beyond Arnold Drive. Subscribers to this system's service include two small commercial uses, a tobacco warehouse, and thirteen dwellings. This collection outfall does not flow into the principal outfall; it flows directly to the sewage disposal plant.

Storm Sewer

To relieve the burden set upon the sanitary sewer system during heavy rains and wet seasons, the community should seek to establish an entirely independent storm sewer system whose outfall would be into the several creeks in the area. The storm sewer system should be constructed so that it is as independent as economically feasible from the sanitary system. The new treatment plant is unable to handle the large amounts of runoff which is piped through it during excessively rainy weather. As a result nearly raw and unprocesssed sewage is introduced into Neils Creek. The community should aim at the solution of this situation.

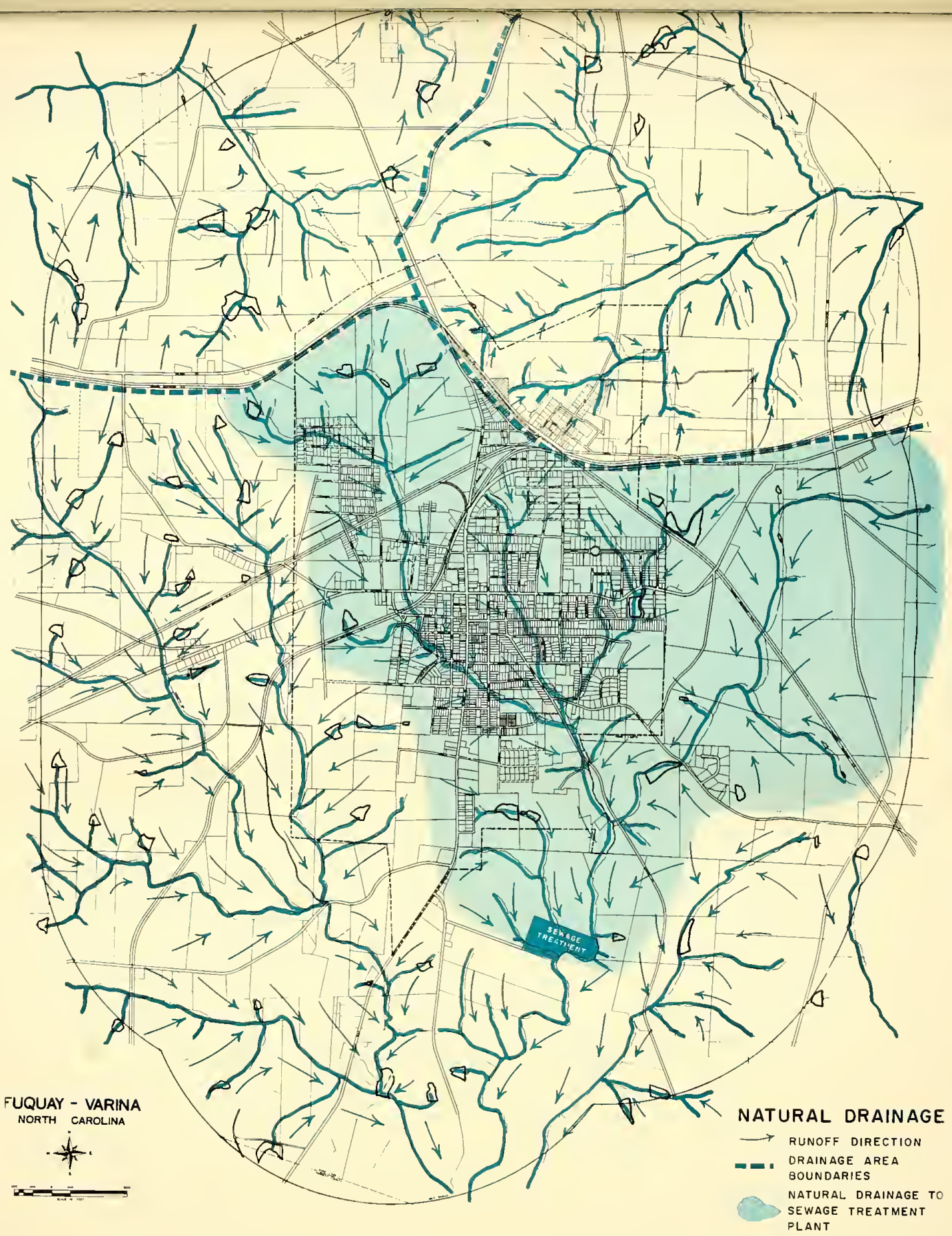
Community Expansion and Sewerage

Probably the most expedient directions for the town to grow, as far as serving new areas with sewer service is concerned, are to the northwest as far as the Durham and Southern Railroad and to the east and southeast within those areas where drainage directs itself toward the main outfall and treatment plant. In nearly all instances areas in these directions could be served by gravity flow sewerage. Beyond, special force sewage facilities would be necessary to move waste to the treatment plant.

The Natural Drainage Map on page 71 shows the town sewage treatment plant and the general directions in which natural flow directs itself. Areas beyond the shaded section require forced sewage facilities.

The preceeding land use analysis has pointed out that general growth is pointed toward the areas in the northwest and southeast. As far as the least expensive sanitary sewage disposal service for Fuquay-Varina's future is concerned, growth in these directions should be prescribed by the plan for future land use and thoroughfares and the new zoning ordinance.

It is recommended that the Town incorporate into its ensuing subdivision regulations provisions that require the installation of public improvements such as sanitary sewer facilities, the expense of which is to be borne by land developers. Presently, the Town is expected to install water, sewer, storm sewer, etc., at the request of new home owners in newly established neighborhoods. This has proven to be a financial burden on the Town.


SEWAGE TREATMENT
FUQUAY - VARINA
NORTH CAROLINA
NATURAL DRAINAGE
RUNOFF DIRECTION
DRAINAGE AREA BOUNDARIES
NATURAL DRAINAGE TO SEWAGE TREATMENT PLANT

OTHER CONSIDERATIONS

SOILS*

Fuquay-Varina is located on the eastern fringe of the Piedmont Upland of the Appalachian Highlands. The underlying geologic structures of the area date back to Pre-Cambrian time. The rocks generally found in the area are gneisses and schists. Generally, good yields of ground water can be taken from 200 to 700 feet in the underlying formations of the area.

The most dominant soil in the area is Norfolk Sand. This soil extends as deep as three feet in places. It drains quickly and withstands drought well. It is found frequently on knolls and ridges and it sometimes extends down steep slopes to stream beds. A large prong of the soil type penetrates the community from the north; this soil type can also be found in the southwestern section of the town.

To the west of this "prong" is an occurrence of Ruston Sandy Loam. Its surface soil is about six inches thick and its subsoil reaches a depth of ten to fifteen inches. Occasionally, gravel is found scattered over the surface. Sometimes it is found in tracts up to one or two acres in extent which have a gravelly sandy loam at the surface. Natural drainage of this soil type is excellent because of its open structure and its generally high location in rolling topography.

On the east and west fringes of the community are occurrences of Norfolk Course Sand. This soil extends to a depth of six inches. The topsoil and subsoil are found to be loose, porous, and open; it is often found to contain

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* Soil Survey of Wake County, North Carolina (Washington: Government Printing Office, U.S. Department of Agriculture, 1916) pp. 21, 37-39.

The Soils of North Carolina (Raleigh: North Carolina Agricultural Experiment Station, North Carolina State College, Technical Bulletin Number 115, December 1955) p. 7.

The Physiographic Provinces of North America (Boston: Ginn and Company, 1940) p. 107 ff.

small percentages of fine, rounded quartz gravel. Soils in this grouping are thoroughly drained because of their high position and their loose and incoherent structure. This soil is somewhat deficient in productiveness, because of the excessive drainage which takes place.

There is an intermittent distribution of Norfolk Sandy Loam soil in the area. This soil extends to a depth of twelve to twenty inches. Rounded quartz fragments can be found throughout; in some places there can be found an acre or two of gravelly textured soil at the surface. Surface erosion is reduced to a minimum in this soil by its porous character which allows for free percolation.

Generally found to the east and southeast the Cecil Sandy Loam is as deep as twelve inches in some locations. Granites and gneiss rocks can be found on some knolls and slopes. Fragments of quartz can be found at the surface throughout the type. However, there is not enough to give the soil a stony or gravelly texture. Usually the lay of the land allows for good drainage.

The Cecil Fine Sandy Loam is found in the southeast and southwest sections of the Fuquay-Varina vicinity. In places it is known to be as deep as three feet. The surface of this type in the area is gently rolling to hilly. In sections it becomes rough and dissected along small stream beds. The surface drainage of this type is excellent. In some cases the run-off is so rapid that it causes gullying.

Located in four locations in the vicinity, the Congaree Fine Sandy Loam occurs in winding strips along the stream beds in the northeast, northwest, and south. This soil ranges in depth from about eight to twelve inches. The topography where this type is found is generally flat and level. The soil usually lies only a few feet above stream channels and it is subjected to inundation during high water stages. However, in dry seasons there is very little danger of injury to crops.

ELEVATIONS & SOIL TYPES

NORFOLK COARSE SAND
NORFOLK SANDY LOAM
NORFOLK SAND
DURHAM FINE SANDY LOAM
RUSTON SANDY LOAM
CONGAREE
CECIL SANDY LOAM
CECIL FINE SANDY LOAM

FUQUAY - VARINA
NORTH CAROLINA

0' 3020'
APPROX. SCALE

N
W E
S

CONTOUR INTERVAL — 100 FT.
SOURCE: SOIL SURVEY OF WAKE CO. 1914
U. S. & N.C. DEPTS. OF AGRICULTURE

There is only one small instance of the Durham Fine Sandy Loam in the area. It is located to the southwest of the central business district along Neils Creek. This soil extends to a depth of three feet, and fragments of quartz are noticeable at the surface. This type is located on gently rolling and undulating to rolling sections. It has good natural drainage.

Soils and Land Capabilities

The most dominant soils in the area are the Ruston Sandy Loam, Norfolk Course Sand, and Norfolk Sand. All types except the Congaree Fine Sandy Loam are generally well drained. Except for this type all can be considered to be suitable for most urban and agricultural uses. The more undulating land in the area is not best suited for heavy commercial, warehousing, industrial, or agricultural uses, but is ideal for residential neighborhoods. A vast majority of the land in the area is buildable; the only general areas which would prove to be undesirable are along creek beds especially to the southeast and in small areas to the northeast, northwest, and south where land may be flooded occasionally.

CLIMATE

Fuquay-Varina lies on the eastern edge of the Piedmont Plateau. Its weather is influenced greatly by the interior continental climates of North America and the humid subtropical climates of southeastern United States.

Precipitation

Fuquay-Varina can expect about 46 inches of rain in a normal year. June, July, August, and September are the wettest months; these normally have precipitation amounting from 4 to 6 inches. The dryest months are October and November when normals range from 2 to 3 inches. The other six months of the year average between 3 and 4 inches of precipitation.

Fortunately snow, sleet, and hail are relatively rare in Fuquay-Varina. The total amount of snowfall and sleet normally is from .2 to 2.4 inches in the winter months. Traces of hail may occur in March, July, August, and September.

The most common type of precipitation in the summer is the afternoon thunder-shower. This type of storm covers small areas and normally lasts not longer than two hours. During extremely severe storms, much water is lost in run-off and minor inundation occurs. On the other hand, winter rains tend to be gentle and may extend over a period as long as twenty-four hours or more. Generally, winter precipitation is associated with frontal storms which frequently pass over the area. Influences from hurricanes are felt about once in every six years as they move near or in from the coast in the fall.

During the spring and summer months rain storms are the worst. The land of the community most severely affected by heavy precipitation is in the east and west fringe areas where the Norfolk Course Sands are situated. In these sections drainage is excessive because of the high position of the land. To the southeast and southwest of the town limits the soils of the Cecil Fine Sandy Loam are dissected with gullies by the torrential rains of summer.

The thunder showers of the area oftentimes inundate the Congaree Fine Sandy Loam areas near and in the stream beds. The rains of summer render the areas where these soil types exist to be marginal for use for short intervals at certain times of the year. Lands affected by heavy rains can, in the case of the Norfolk and Cecil soils, be used by some urban uses of the residential and light commercial types. The Congaree, on the other hand, may be used for social and cultural uses such as park-land and recreation in the dry seasons of the year.

Wind

The characteristics of the winds in the Fuquay-Varina area can generally be termed calm and low in velocity. The average yearly velocity is just over 7 miles per hour. In February, March, and April the year's highest velocities are recorded. During these months the average speed ranges from 8 to 9 miles per hour. August's average velocity is the lowest in the year; its mean hourly speed is nearly 6. Mean hourly velocities for the remainder of the year range from 6 to 8 mph.

The prevailing winds are from the southwest for ten months of the year -- November through August. In September and October the prevailing winds blow from the northeast.

Therefore, in the preparation of the land use plan for Fuquay-Varina, certain standards that take into consideration the prevailing winds of the area should be established and utilized. The best sections of the community for the location of offensive uses such as abbatoirs, incinerators, and industries which emit smoke, odor, noise, air laden debris, or other noxious conditions, should be pointed out. It is emphasized here that although wind direction is important in the locating of certain uses to protect the citizenry from large amounts of noise, odor, and smoke which may endanger its health, there are other determinants that must be taken into consideration in locating future uses. These will be discussed in the Land Development Plan, Part II.